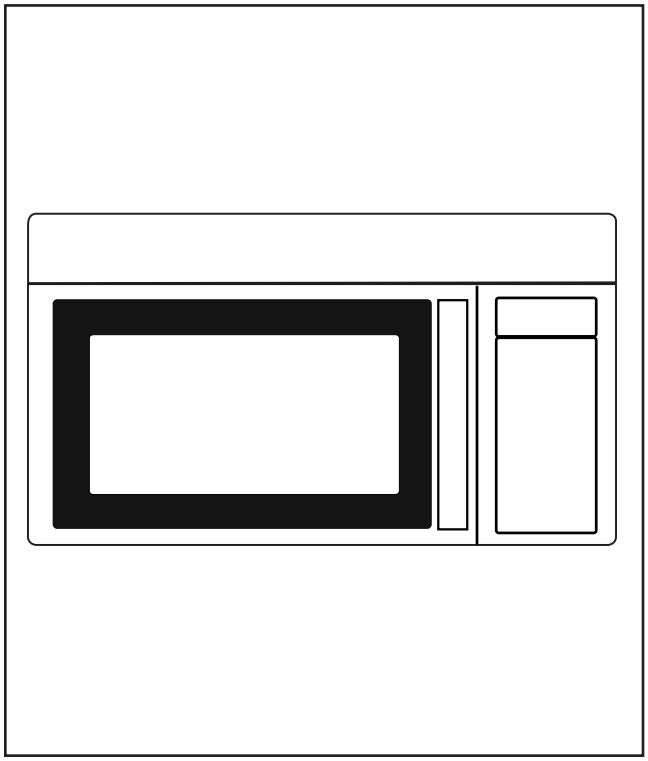
SAMSUNG

MICROWAVE OVEN

BASIC : SMH7178STD
MODEL : SMH7178STE

SERVICE Manual

MICROWAVE OVEN



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PRECAUTIONS TO BE OBSERVED BEFORE AND DURING SERVICING TO AVOID POSSIBLE EXPOSURE TO EXCESSIVE MICROWAVE ENERGY

(a) Do not operate or allow the oven to be operated with the door open.

(b) Make the following safety checks on all ovens to be serviced before activating the magnetron or other microwave source, and make repairs as necessary:
  (1) Interlock operation,
  (2) proper door closing,
  (3) seal and sealing surfaces (arcing, wear, and other damage),
  (4) damage to or loosening of hinges and latches,
  (5) evidence of dropping or abuse.

(c) Before turning on microwave power for any service test or inspection within the microwave generating compartments, check the magnetron, wave guide or transmission line, and cavity for proper alignment, integrity, and connections.

(d) Any defective or misadjusted components in the interlock, monitor, door seal, and microwave generation and transmission systems shall be repaired, replaced, or adjusted by procedures described in this manual before the oven is released to the owner.

(e) A Microwave leakage check to verify compliance with the Federal performance standard should be performed on each oven prior to release to the owner.

1. Precaution

Follow these special safety precautions. Although the microwave oven is completely safe during ordinary use, repair work can be extremely hazardous due to possible exposure to microwave radiation, as well as potentially lethal high voltages and currents.

1-1 Safety precautions (⚠)

1. All repairs should be done in accordance with the procedures described in this manual. This product complies with Federal Performance Standard 21 CFR Subchapter J(DHHS).

2. Microwave emission check should be performed to prior to servicing if the oven is operative.

3. If the oven operates with the door open :
   Instruct the user not to operate the oven and contact the manufacturer and the center for devices and
   radiological health immediately.

4. Notify the Central Service Center if the microwave leakage exceeds 5 mW/cm^2.

5. Check all grounds.

6. Do not power the MWO from a “2-prong” AC cord. Be sure that all of the built-in protective devices are replaced. Restore any missing protective shields.

7. When reinstalling the chassis and its assemblies, be sure to restore all protective devices, including: nonmetallic control knobs and compartment covers.

8. Make sure that there are no cabinet openings through which people --particularly children --might insert objects and contact dangerous voltages. Examples: Lamp hole,ventilation slots.

9. Inform the manufacturer of any oven foundto have emission in excess of 5 mW/cm^2 ,Make repairs to bring the unit into compliance at no cost to owner and try to determine cause.
   Instruct owner not to use oven until it has been brought into compliance.

   CENTRAL SERVICE CENTER

10. Service technicians should remove their watches while repairing an MWO.

11. To avoid any possible radiation hazard,replace parts in accordance with the wiring diagram. Also, use only the exact replacements for the following parts: Primary and secondary interlock switches, interlock monitor switch.

12. If the fuse is blown by the Interlock Monitor Switch: Replace all of the following at the same time: Primary, door sensing switch and power relay, as well as the Interlock Monitor Switch. The correct adjustment of these switches is described elsewhere in this manual. Make sure that the fuse has the correct rating for the particular model being repaired.

13. Design Alteration Warning:
    Use exact replacement parts only, i.e.,only those that are specified in thedrawings and parts lists of this manual. This is especially important for the Interlock switches, described above. Never alter or add to the mechanical or electrical design of the MWO. Any design changes or additions will void the manufacturer’s warranty. Always unplug the unit’s AC power cord from the AC power source before attempting to remove or reinstall any component or assembly.

14. Never defeat any of the B+ voltage interlocks. Do not apply AC power to the unit (or any of its assemblies) unless all solid-state heat sinks are correctly installed.

15. Some semiconductor (“solid state”) devices are easily damaged by static electricity. Such components are called Electrostatically Sensitive Devices (ESDs). Examples include integrated circuits and field-effect transistors. Immediately before handling any semiconductor components or assemblies, drain the electrostatic charge from your body by touching a known earth ground.

16. Always connect a test instrument’s ground lead to the instrument chassis ground before connecting the positive lead; always remove the instrument’s ground lead last.

1-2 Special Servicing Precautions (Continued)

17. When checking the continuity of the witches or transformer, always make sure that the power is OFF, and one of the lead wires is disconnected.

18. Components that are critical for safety are indicated in the circuit diagram by shading, ⚠ or ⚠.

19. Use replacement components that have the same ratings, especially for flame resistance and dielectric strength specifications. A replacement part that does not have the same safety characteristics as the original might create shock, fire or other hazards.

NOTE : Connect the oven to a 20A. When connecting the oven to a 15A,make sure that circuit breaker can operate.

1-3 Special High Voltage Precautions

1. High Voltage Warning Do not attempt to measure any of the high voltages --this includes the filament voltage of the magnetron. High voltage is present during any cook cycle. Before touching any components or wiring, always unplug the oven and discharge the high voltage capacitor (See Figure 1-1)

2. The high-voltage capacitor remains charged about 30 seconds after disconnection. Short the negative terminal of the high-voltage capacitor to to the oven chassis. (Use a screwdriver.)

3. High voltage is maintained within specified limits by close-tolerance, safety-related components and adjustments. If the high voltage exceeds the specified limits, check each of the special components.

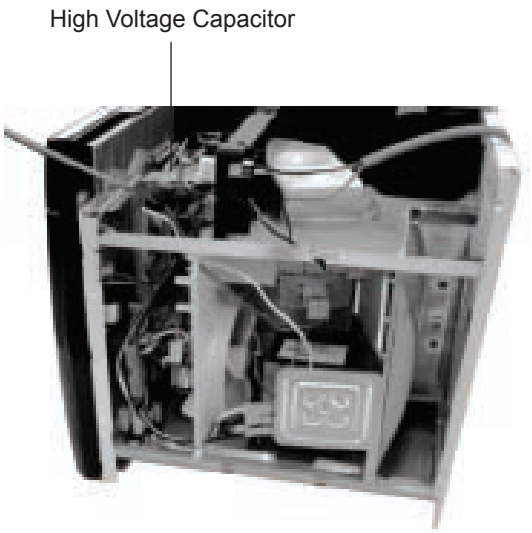


Fig. 1-1 Discharging High Voltage Capacitor

PRECAUTION

There exists HIGH VOLTAGE ELECTRICITY with high current capabilities in the circuits of the HIGH VOLTAGE TRANSFORMER secondary and filament terminals. It is extremely dangerous to work on or near these circuits with the oven energized.

DO NOT measure the voltage in the high voltage circuit including filament voltage of magnetron.

PRECAUTION

Never touch any circuit wiring with your hand nor with uninsulated tool during operation.

PRECAUTION

Servicemen should remove their watches whenever working close to or replacing the magnetron.

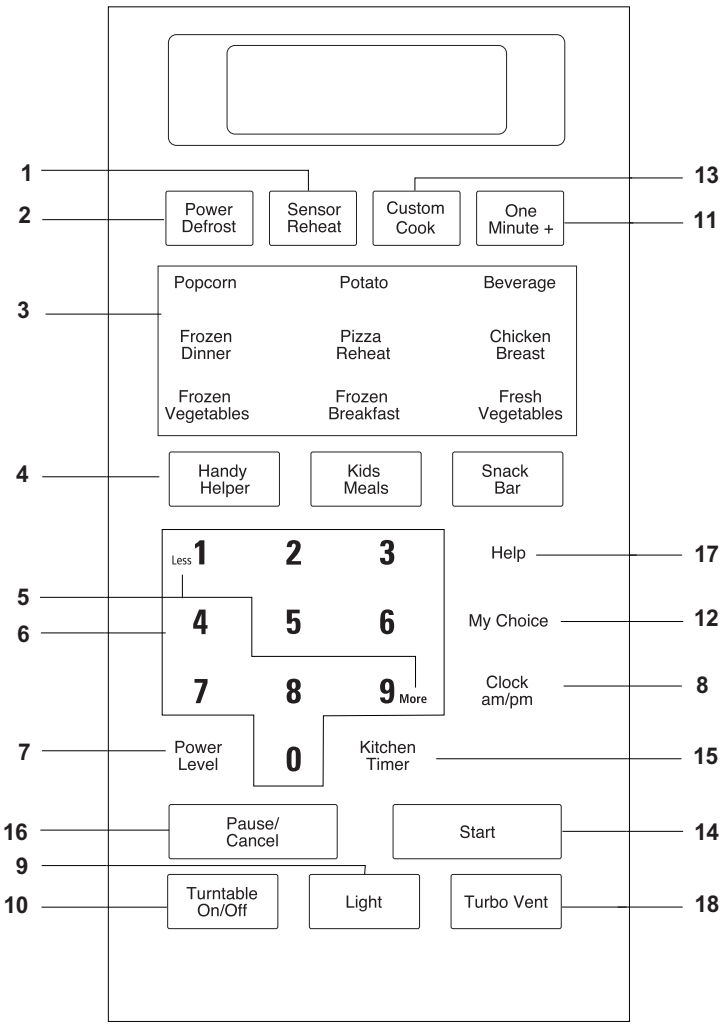
2. Specifications

2-1 Table of Specifications

TIMER	99 MINUTES 99 SECONDS
POWER SOURCE	120V 60Hz, AC
POWER CONSUMPTION	MICROWAVE : 1,650W
OUTPUT POWER	FROM 100 TO 1100W(10 LEVEL POWER) (IEC-705 TEST PROCEDURE)
OPERATING FREQUENCY	2,450MHz
MAGNETRON	OM75P(10)ERHN
COOLING METHOD	COOLING FAN MOTOR
OUTSIDE DIMENSIONS	$29^{14/16}$"(W) x $15^{15/16}$"(H) x $15^{11/32}$"(D) mm
NET WEIGHT	58.4 lbs
SHIPPING WEIGHT	64.4 lbs

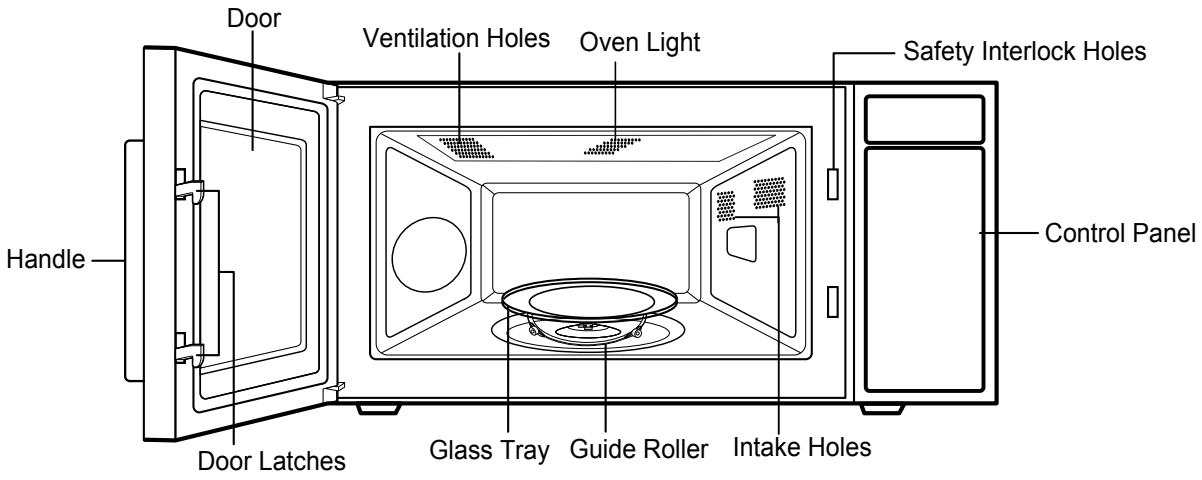
3. Operating Instructions

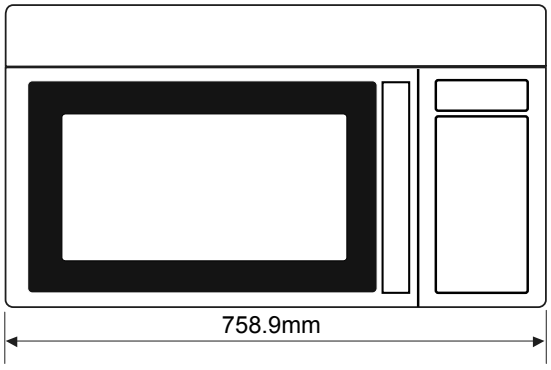
3-1 Control Panel

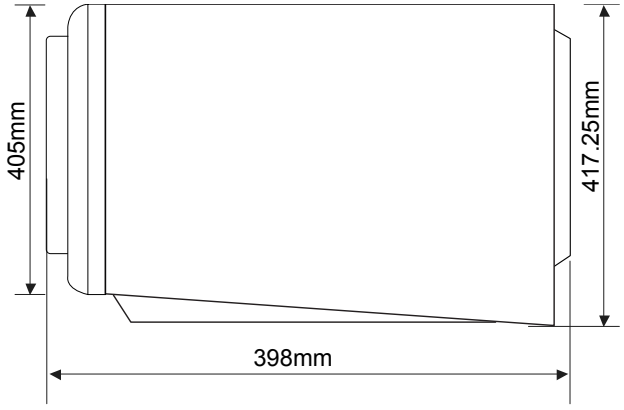


1. Sensor Reheat
2. Power Defrost
   Sets weight of food to be defrosted.
3. Sensor Cook Buttons p.11
   Sensor settings to cook popular foods.
4. Handy Helper, Kids Meals, Snack Bar
   Selects type of dish to be reheated.
5. More/Less
   Increase or decrease cooking time.
6. Number Buttons
   Set cooking times or amounts and power levels other than high.
7. Power Level
   Press this pad to set a power level other than high.
8. Clock am/pm
   Sets current time
9. Light On/Night/Off Button
10. Turntable On/Off Button
11. One Minute +
    Press once for every minute of cooking at High power.
12. My Choice
    Press to set non-cooking feature.
13. Custom Cook
    Press twice to program your favorite recipe.
    Press once to cook with that recipe.
14. Start
    Press to start cooking.
15. Kitchen Timer
    Sets kitchen or convenience timer.
16. Pause/Cancel
    Press to pause oven or correct a mistake.
17. Help
    Press to see help information about the feature you are using.
18. Vent Fan Turbo/Hi/Low/Off Button

3-2 Features & External Views







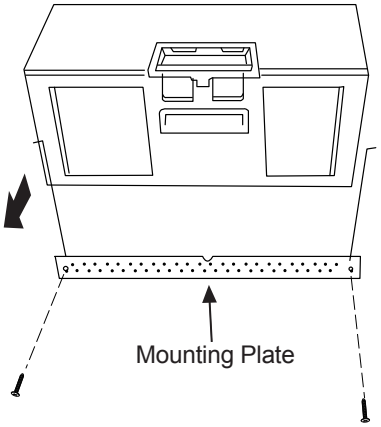
3-3 Accessary

Glass tray	Roller guide ring

3-4 INSTALLATION

The Microwave Oven is supported by a special bracket assembly (mounting system) supplied with the oven. The bracket assembly must be mounted to the wall with toggle bolts through the wall, and a lag screw into a wall stud. After the bracket assembly is installed, the unit can be slid over the two rails of the bracket assembly. Two bolts are run down through the cabinet bottom and into the oven case to pull the oven up against the cabinet bottom.

NOTE : For easier removal and personal safety it is recommended that two people remove this product.

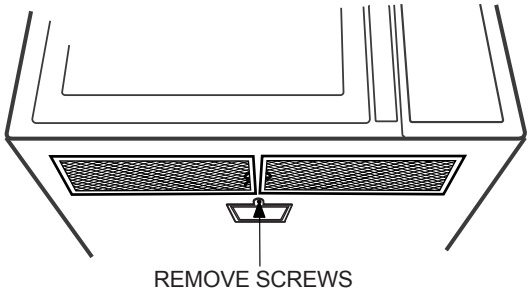


CAUTION!

The mounting surface must be capable of supporting the cabinet load, in addition to the 64 pound product, plus additional loads of up to 50 pounds or a **total weight of 114 pounds.** This product cannot be installed to cabinet arrangements such as an island or peninsula. It must be mounted to both a top cabinet and wall.

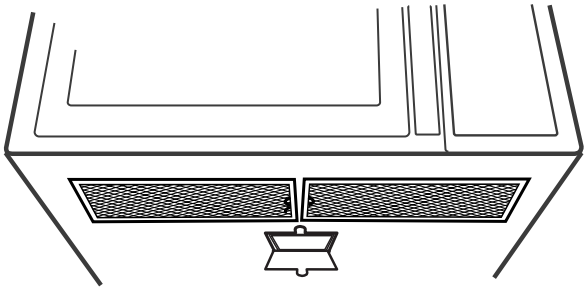
VENT BLOWER

The vent or exhaust blower is located at the top of the oven. It is shipped for vertical exhaust but can be changed to rear exhaust or recirculating (See installation instrustions on how to change and/or blower section on how to remove).



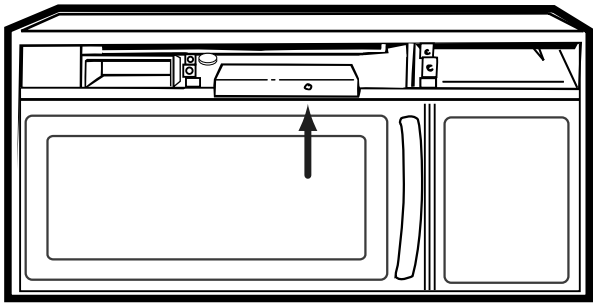
COOKTOP LIGHTS

One 40-watt screw base incandescent bulbs are located on the bottom between the two grease filters. The bulbs are user replaceable by removing one screw and lowering access cover. The bulbs could be difficult to remove when replaced for the first time. a silicone glue is used to secure them during shipping.



OVEN LIGHT

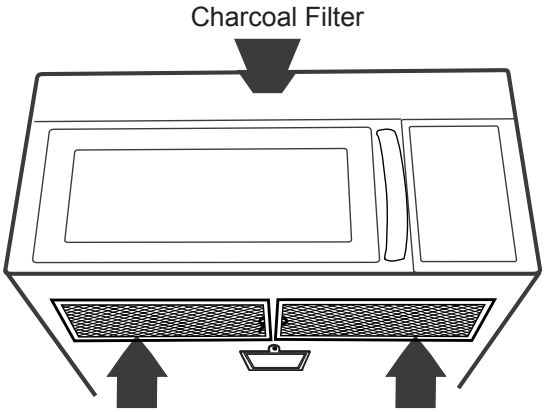
A 40-watt screw base incandescent bulb is located in the top of the oven cavity at the front.
It is user replaceable by removing the top grill (2 screws. On the front of outer case.). The bulb is then accessible by removing a metal cover (1 screw).



3-5 REUSABLE GREASE FILTERS

The metal filter trap grease released by foods on the cooktop. They also prevent flames from foods on the cooktop from damaging the inside of the microwave.

For this reason, the filters must ALWAYS be in place when the hood the vent fan is used. The grease filter should be cleaned once a month, or as needed.

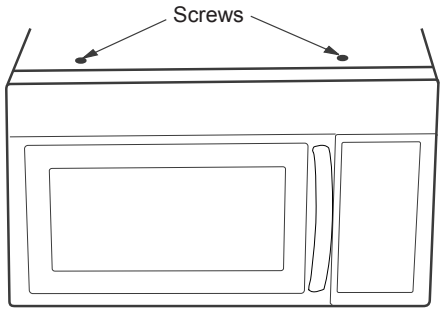


Reusable Grease Filters

REMOVING CHARCOAL FILTER

To remove the charcoal filter, disconnect power at the main fuse or circuit breaker panel or pull the plug. Remove the top grille by removing the 2 screws that hold it in place.

Slide the filter towards the filter towards the front of the oven and remove it.



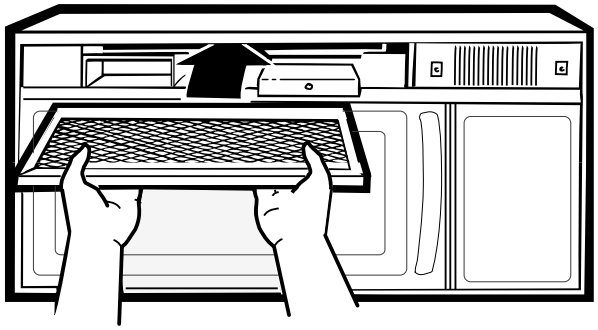
Remove 2 grille screws to remove the grill

AUTOMATIC FAN

An automatic fan feature protects the microwave from too much heat rising from the cooktop below it. If you have turned the fan on you may find that you cannot turn it. The fan will automatically turn off when the internal parts are cool. If may stay on for 30 minutes or more after the cooktop and microwave controls are turned off.

GRILLE REMOVAL

The top full-width grille is removable for service to some components, such as : oven light, cavity T.C.O, vent motor capacitor and fuse.

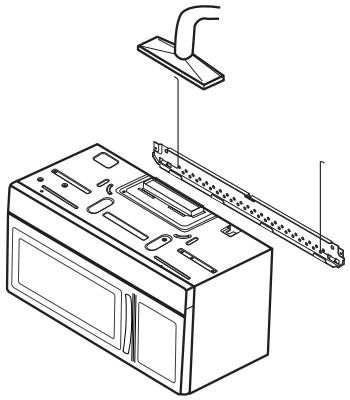


TO REMOVE GRILLE :
1. Disconnect oven power.
2. Remove screws (2) from grille outer case.
3. Lift off grille.

REMOVING OVEN FROM WALL (2 PEOPLE REQUIRED)

Oven is hooked on metal tabs at bottom of wall mounting plate and fastened to cabinet by (3) top cabinet bolts.

CAUTION : Oven weights 63.1 lbs. Requires 2 people for removal.



1. Disconnect power cord. Top vented models- disconnect duct and remove damper assembly.
2. Remove (3) top cabinet bolts.
3. Pull unit forward slowly providing adequate support to prevent dropping unit during removal of last top cabinet bolts.

4. Disassembly and Reassembly

4-1 Replacement of Magnetron, Motor Assembly and Lamp

Remove the magnetron including the shield case, permanent magnet, choke coils and capacitors (all of which are contained in one assembly).

1. Disconnect all lead wires from the magnetron and lamp.
2. Remove a screw securing air cover.
3. Remove the air cover.
4. Remove screws securing the magnetron to the wave guide.
5. Take out the magnetron very carefully.
6. Remove tow from the back panel of fan motor assembly.
7. Take out the fan motor assembly.
8. Remove the oven lamp by rotating to pull out from hole of air cover.

NOTE1: When removing the magnetron, make sure that its antenna does not hit any adjacent parts, or it may be damaged.

NOTE2: When replacing the magnetron, be sure to remount the magnetron gasket in the correct position and make sure the gasket is in good condition.

4-2 Replacement of High Voltage Transformer

1. Discharge the high voltage capacitor.
2. Disconnect all the leads.
3. Remove the mounting bolts.
4. Reconnect the leads correctly and firmly.

PRECAUTION

Servicemen should remove their watches whenever working close to or replacing the magnetron.

PRECAUTION

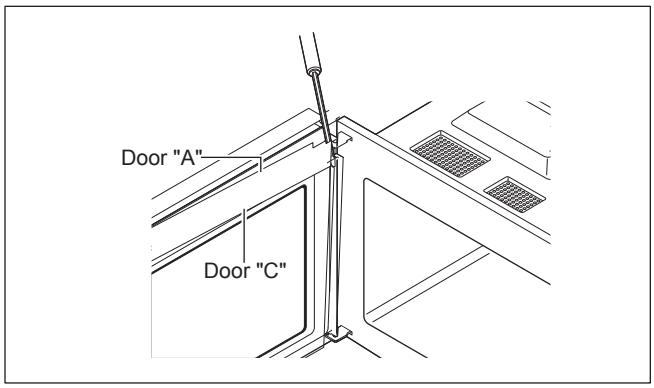
There exists HIGH VOLTAGE ELECTRICITY with high current capabilities in the circuits of the HIGH VOLTAGE TRANSFORMER secondary and filament terminals. It is extremely dangerous to work on or near these circuits with the oven energized.

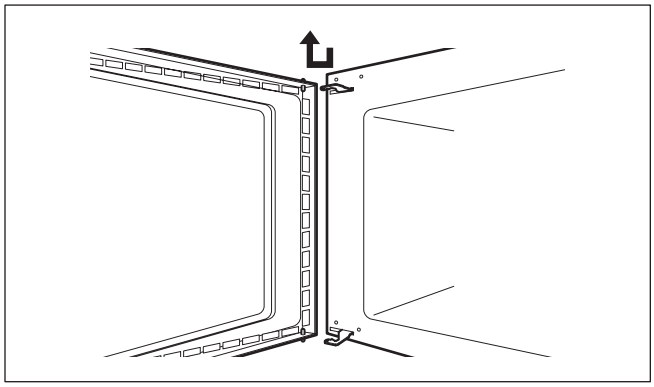
DO NOT measure the voltage in the high voltage circuit including filament voltage of magnetron.

4-3 Replacement of Door Assembly

4-3-1 Removal of Door “C”

Insert flat screw driver into the gap between Door “A” and Door “C” to remove Door “C”. Be careful when handling Door “C” because it is fragile.
Then remove the door assembly.

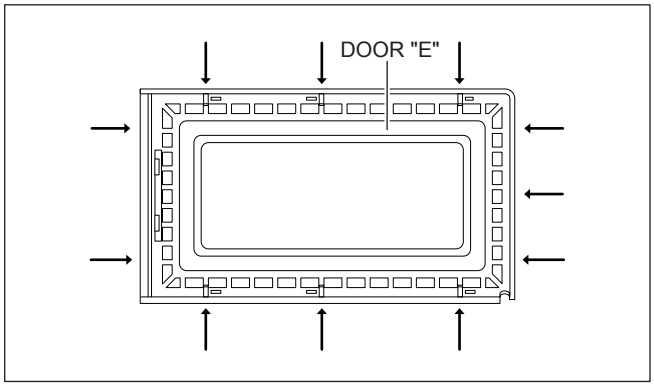




4-3-2 Removal of Door “E”

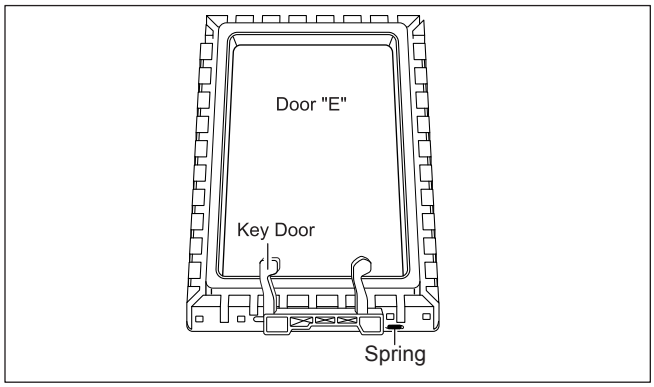
Following the procedure as shown in the figure, insert and bend a thin metal plate between Door “E” and Door “A” until you hear the ‘tick’ sound.

- Insertion depth of the thin metal plate should be 0.5mm or less.



4-3-3 Removal of Key Door & Spring

Remove pin hinge from Door “E”
Detach spring from Door “E” and key door.



4-3-4 Reassembly Test

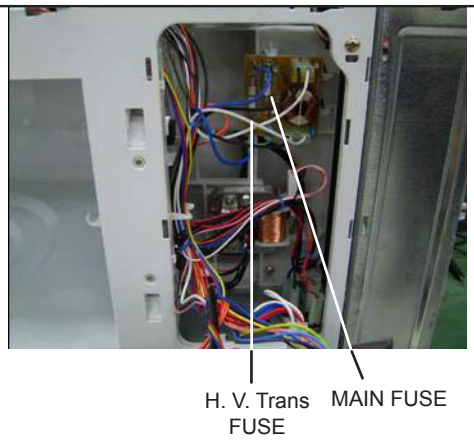
After replacement of the defective component parts of the door, reassemble it and follow the instructions below for proper installation and adjustment so as to prevent an excessive microwave leakage.

1. When mounting the door to the oven, be sure to adjust the door parallel to the bottom line of the oven face plate by moving the upper hinge and lower hinge in the direction necessary for proper alignment.
2. Adjust so that the door has no play between the inner door surface and oven front surface. If the door assembly is not mounted properly, microwave energy may leak from the space between the door and oven.
3. Do the microwave leakage test.

4-4 Replacement of Main Fuse & H. V. Trans Fuse

The fuse is located behind the control panel mounted to the installation bracket.

1. Disconnect power and remove grille.
2. Remove a screw that secure the installation bracket.



MAIN FUSE

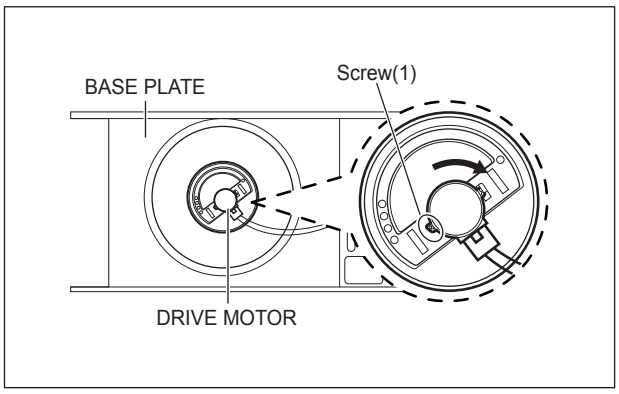
1. When 20A fuse blows out by the operation of interlock monitor switch failure, replace the primary interlock switch, door sensing switch, interlock monitor switch and power relay.
2. When the above 3 switches operate properly, check if any other part such as the control circuit board, blower motor or high voltage transformer is defective.

H. V. TRANS FUSE

1. When 20 Amp. fuse is blown due to operation of the H. V. Trans fall mode, the H. V. Trans Fuse must be replaced.

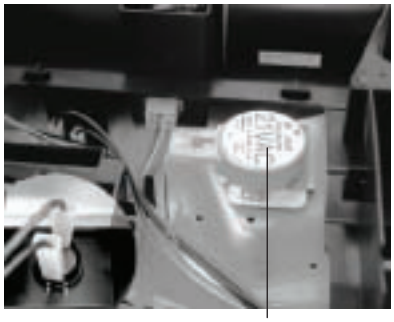
4-5 Replacement of Drive Motor

1. Disconnect power.
2. Remove the three screws at the assy base bottom.
3. Remove the plastic cover (fixed with a screw) that covers the motor.
4. Remove all of the wires connected.
5. Remove a screw from the motor.
6. Turn the motor to the right and remove it.
7. After replacing the motor, you should re-install it on the accurate position of the coupler.
8. Assembling is in the reverse order to disassebling.



4-6 Replacement of stirrer motor

1. Disconnect power and remove grille screws(2).
2. Remove grille and the bracket duct upper screw(1).
3. Remove the bracket duct upper and disconnect the stirrer motor wire.
4. Remove stirrer motor screws(1) and lift up stirrer motor after turn left.



4-7 Removal of stirrer

The stirrer is located on the upper side of the cavity. The oven uses a top feed wave guide.

1. Disconnect power and open the door.
2. Remove the clip and turn the stirrer cover left.
3. Remove stirrer cover and the stirrer will come with it.
4. Replace the clip if the clip head broken.

4-8 Replacement of Control Circuit Board

4-8-1 Removal of Control Box

1. Disconnect power and remove grille.
2. Remove a screw securing the control box assembly.
3. Be sure to ground any static electric charge in your body and never touch the control circuit.
4. Disconnect the connectors from the control circuit board.

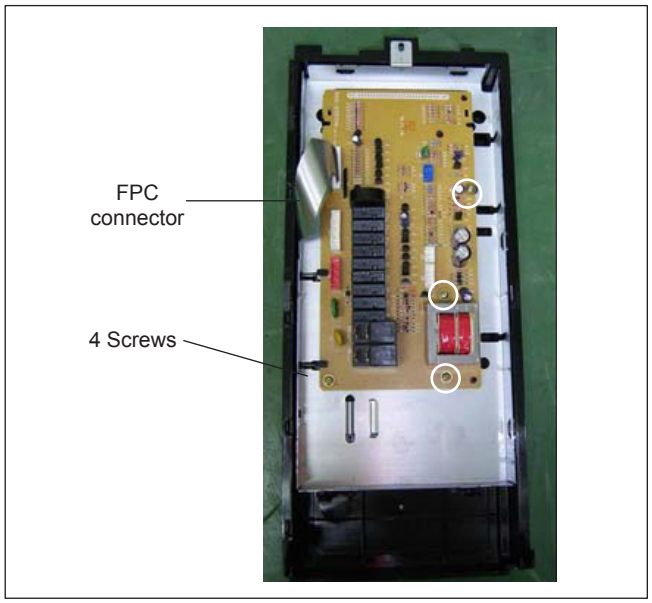
4-8-2 Removal of P.C.B Assembly

1. Pull the lever end of the plastic fastener and remove the Flexible Printed Circuit(FPC) of membrane panel.

2. Remove screws (3) securing the control circuit board.

3. Lift up the control circuit board from the Ass'y control box.

4. When reconnecting the FPC connector, make sure that the holes on the connector are properly engaged with the hooks on the Plastic Fastener.



5. Alignment and Adjustments

PRECAUTION

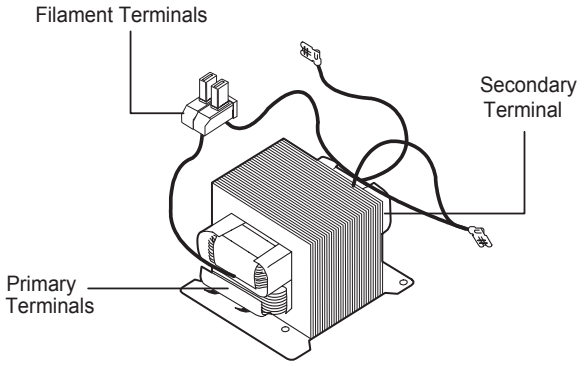
1. High voltage is present at the high voltage terminals during any cook cycle.
2. It is neither necessary nor advisable to attempt measurement of the high voltage.
3. Before touching any oven components or wiring, always unplug the oven from its power source and discharge the high voltage capacitor.

5-1 High Voltage Transformer

1. Remove connectors from the transformer terminals and check continuity.
2. Normal resistance readings are as follows:

	SHV-U1870AR
Secondary	80.5 Ω +2%
Filament	Shows Continuity
Primary	1100W 0.330 Ω + 2%
	1000W 0.375 Ω + 2%

(Room temperature = 20°C)



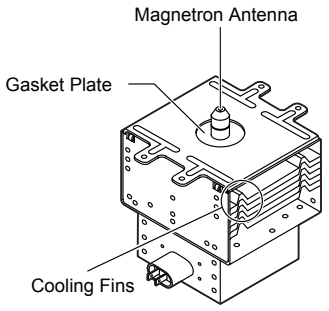
5-2 Low Voltage Transformer

1. The low voltage transformer is located on the control circuit board.
2. Remove the low voltage transformer from the PCB Ass'y and check continuity.
3. Normal resistor reading is shown in the table.

Terminals	Resistance
	SLV-1350U(P)
1~2(Input)	127.7 Ω
4~5(Output 2.7V)	1.8 Ω
6~7(Output 7.0V)	2.0 Ω
7~8(Output 19.0V)	4.8 Ω

5-3 Magnetron

1. Continuity checks can indicate only an open filament or a shorted magnetron. To diagnose an open filament or shorted magnetron :
2. Isolate the magnetron from the circuit by disconnecting its leads.
3. A continuity check across the magnetron filament terminals should indicate one ohm or less.
4. A continuity check between each filament terminal and magnetron case should read open.



5-4 High Voltage Capacitor

1. Check continuity of the capacitor with the meter set at the highest resistance scale.
2. Once the capacitor is charged, a normal capacitor shows continuity for a short time, and then indicates 9MΩ.
3. A shorted capacitor will show continuous continuity.
4. An open capacitor will show constant 9MΩ.
5. Resistance between each terminal and chassis should read infinite.

5-5 High Voltage Diode

1. Isolate the diode from the circuit by disconnecting its leads.
2. With the ohm-meter set at the highest resistance scale, measure across the diode terminals. Reverse the meter leads and read the resistance. A meter with 6V, 9V or higher voltage batteries should be used to check the front-to back resistance of the diode (otherwise an infinite resistance may be read in both directions). The resistance of a normal diode will be infinite in one direction and several hundred KΩ in the other direction.

5-6 Main Relay and Power Control Relay

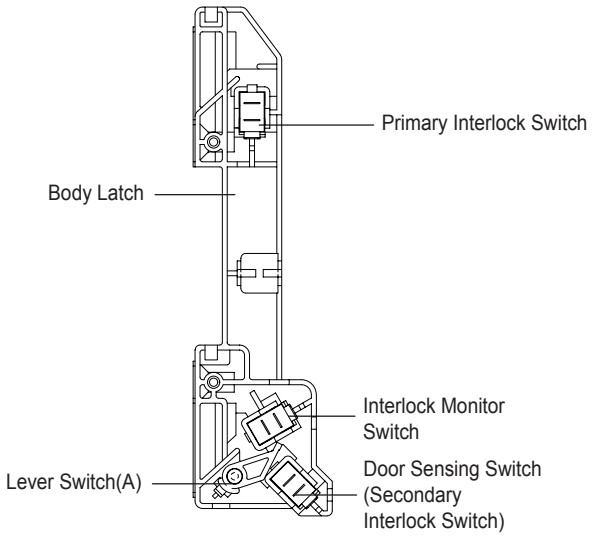
1. The relays are located on the PCB Ass'y. Isolate them from the main circuit by disconnecting the leads.
2. Operate the microwave oven with a water load in the oven. Set the power level set to high.
3. Check continuity between terminals of the relays after the start pad is pressed.

5-7 Adjustment of Primary Switch, Door Sensing Switch and Monitor Switch

PRECAUTION

For continued protection against radiation hazard, replace parts in accordance with the wiring diagram and be sure to use the correct part number for the following switches: Primary and secondary interlock switches, and the interlock monitor switch (replace all together). Then follow the adjustment procedures below. After repair and adjustment, be sure to check the continuity of all interlock switches and the interlock monitor switch.

1. When mounting Primary switch and Interlock Monitor switch to Latch Body, consult the figure.
2. No specific adjustment during installation of Primary switch and Monitor switch to the latch body is necessary.
3. When mounting the Latch Body to the oven assembly, adjust the Latch Body by moving it so that the oven door will not have any play in it. Check for play in the door by pulling the door assembly. Make sure that the latch keys move smoothly after adjustment is completed. Completely tighten the screws holding the Latch Body to the oven assembly.
4. Reconnect to Monitor switch and check the continuity of the monitor circuit and all latch switches again by following the components test procedures.
5. Confirm that the gap between the switch housing and the switch actuator is no more than 0.5mm when door is closed.
6. **Interlock Switch Replacement** - When replacing faulty switches, be sure switch mounting tabs are not bent, broken or otherwise deficient in their ability to secure the switches in place.



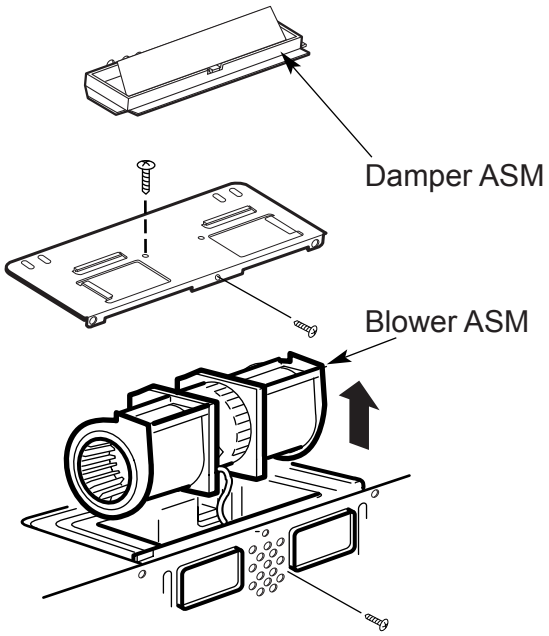
	Door Open	Door Closed
Primary Interlock S/W	∞	0
Monitor switch(COM-NC)	0	∞
Door Sensing S/W (Secondary Interlock S/W)	∞	0

5-8 Vent Exhaust Blower Motor

THIS COMPONENT REQUIRE REMOVAL OF MICROWAVE OVEN FROM INSTALLATION FOR SERVICING.

The blower is a two speed (HI-LO) capacitor run blower assembly located on top of the microwave oven. The blower is operated by low voltage relays located on the smart board.

The blower motor has 3 winding which can be tested for continuity from the front by removing the top grille and opening the control panel.



RUN CAPACITOR

The run capacitor is located behind the top grille above the control area. The capacitor is used for more torque and electrical phasing. Without the capacitor the blower might run but would be much slower.

TO TEST THE CAPACITOR

1. Remove grille, discharge capacitor and disconnect one capacitor lead.
2. Make appropriate capacitor check (with analog meter needle should rise then fall, cap is charging then discharging).

TO TEST BLOWER WINDINGS:

1. Disconnect power and remove grille.
2. Open control panel and discharfe capacitor.
3. Disconnent two wires to run capacitor. Continuity test across the two wires should ve approximately 75 ohms of resistance. This test allows you to read across all three windings at the same time.

TO REMOVE VENT BLOWER

1. Remove unit from its installation.
2. Remove 5 screws securing damper and motor assembly to top and back of unit and lift off. (1 screw is located under damper.)
3. Disconnect blower plug.

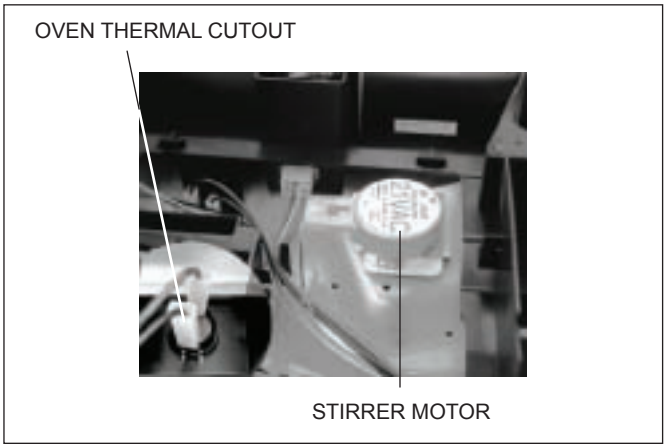
NOTE: Place blower wires in routing slots to avoid pinching of wires.

5-9 Thermal Cutout (TCO'S)

There are 4 different thermal cutouts in this unit with 4 different purposes. They are :
1. Oven thermal cutout (flame sensor), on cavity top.
2. Hood thermal cutout, inside control area on duct.
3. Bottom thermal cutout, on floor of control area.
4. Magnetron thermal cutout, on magnetron.

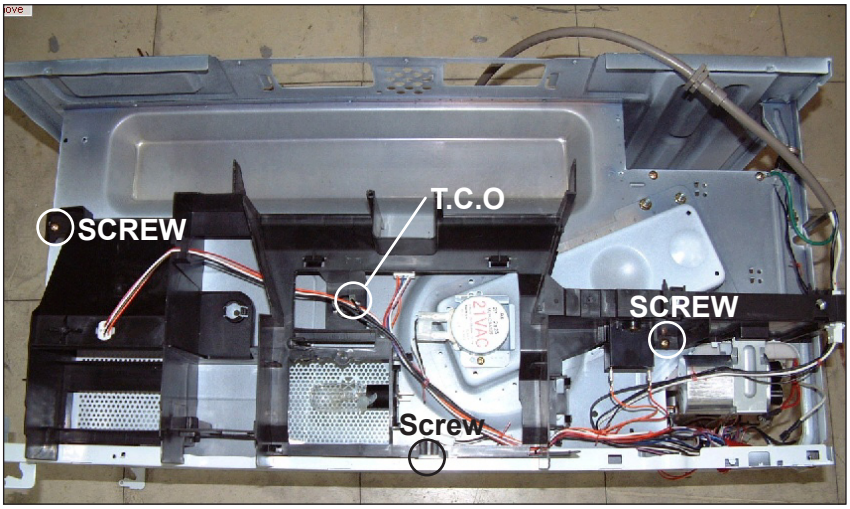
5-9-1 Oven Thermal Cutout (Flame sensor)

The oven thermal cutout(Cavity TCO) is located on the top side of the oven cavity beside exhaust duct with a temperature rating of 248OF(120OC) and is non-resetable.
The cutout is tightly held to the top of the oven cavity by duct-upper.

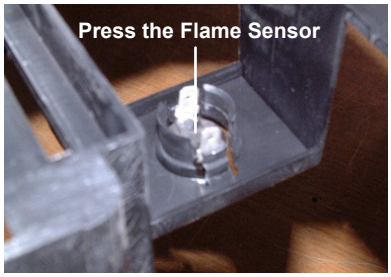


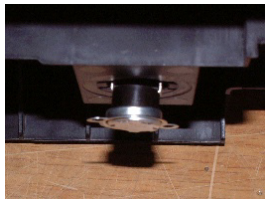
5-9-2 Replacement of Flame Sensor

Disconnect oven power. Remove Grille & Panel-outer.
1. Remove screws(3) securing the duct upper.



2. Loft up the duct upper from the cavity.
3. Disconnect two wire leads.
4. Press the top of the thermal cutout and pull out it in the duct upper.

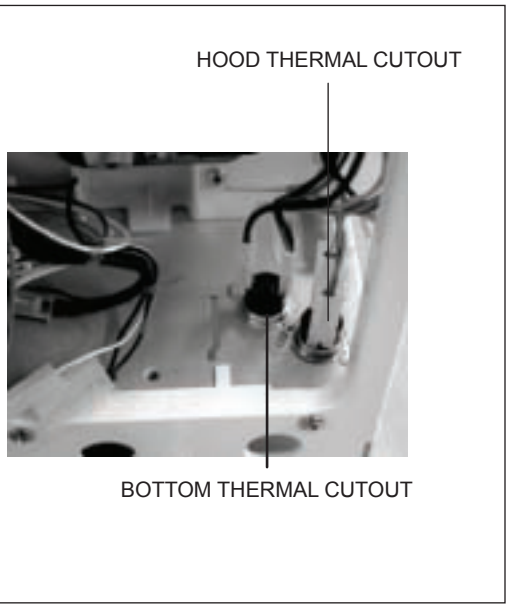




After press

5-9-3 Bottom Thermal Cutout

This cutout will protect the touch control from excessive heat by turning the vent fan on at low speed. If the surface units of the range are used for long periods of time heat will build up and could damage the microwave control. In order to prevent this a thermal cutout is installed on the duct behind the control. This cutout will close (158°F/70°C - vent fan energized)and open (104°F/40°C - vent fan de-energized) depending on temperatures it sense.



To Remove hood Thermal Cutout :

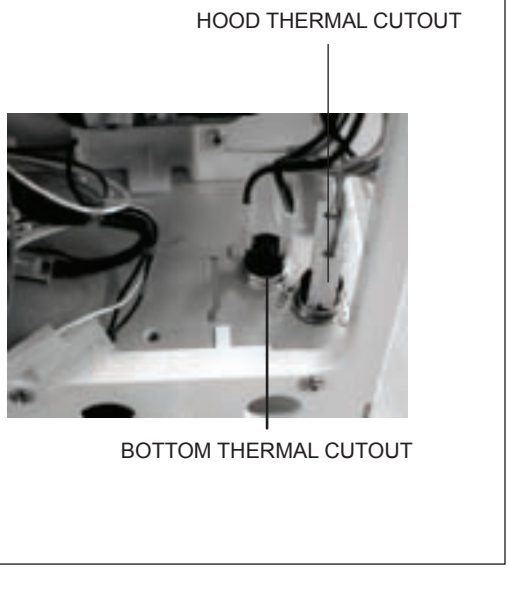
1. Disconnect power and remove grille.
2. Remove control box assembly.
3. Remove two wire leads and unscrew one screw capturing cutout on base plate.

***NOTE** : It this cutout were to open it would be difficult to detect. The only time it functions is during an overheat condition. It will be normally open when checked with an ohmmeter.*

5-9-4 Magnetron Thermal Cutout

THIS COMPONENT REQUIRE REMOVAL OF MICROWAVE OVEN FROM INSTALLATION FOR SERVICING.

During a fire on the stove the heat could be intense enough to close the Hood Thermal Cutout and force the fan to run. While at moderate high temperature we do want it to run, however during a fire it is advantageous to NOT have the vent fan running. So if a fire were to start on the stove top the Bottom Thermal Cutout would open at 248°F(120°C) and remove all power to the microwave oven. This cutout is designed to not be resetable.



To Remove Bottom Thermal Cutout :

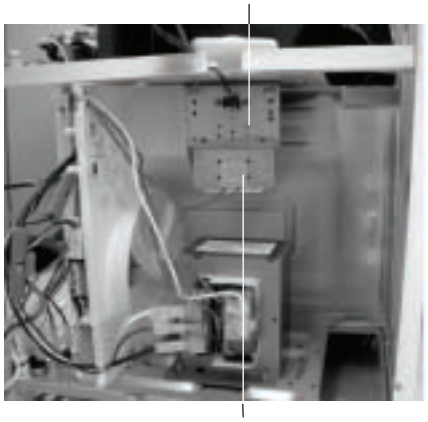
1. Disconnect power and remove grille.
2. Remove control box assembly.
3. Remove two wire leads and unscrews one screw capturing cutout on base plate.

5-9-5 Magnetron Thermal Cutout

The magnetron thermal cutout is located above the leads to the magnetrons. It is designed to prevent damage to the magnetron if an overheated condition develops in the tube to cooling fan failure, obstructed air ducts, dirty or blocked air intake.
Under normal operation, the magnetron thermal cutout remains closed. However, when abnormally high temperatures are reached within the magnetron, the magnetron thermal cutout will open at 320°F(160OC) causing the oven to shut down. After the temperature drops to 140°F(60°C) it will reset and cooking will be able to resume.

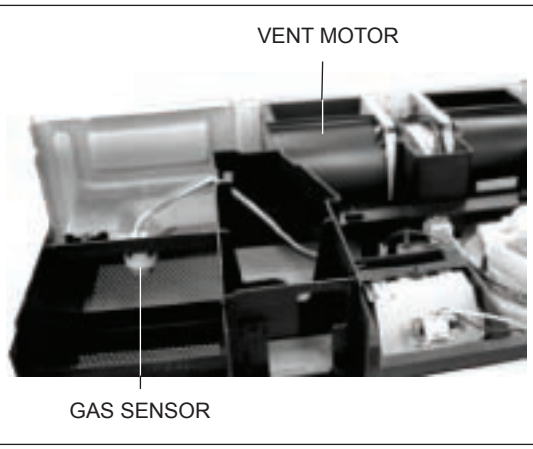
To Remove Magnetron Thermal Cutout :

1. See 'Removing Magnetron'.



5-10 Sensor

The Sensor Cooking Function uses a special gas sensor which detects both humidity(steam) and hydrocarbons(food odors) during the cooking process. Before conducting either of the sensor tests below, ensure the unit is plugged into a will outlet for at least 5 minutes. If already plugged in, proceed. The sensor is a plug-in device located in the vent area at the top left hand corner of the cavity behind the grille.



To Service :

1. Disconnect power and remove grille.
2. Separate retainer from receptacle and unplug sensor.

SENSOR COOKING TEST

1. Place 1/3 cup tap water in oven.
2. Touch [potato] , the oven starts immediately.
3. Control Beeps and Shuts off.
4. Touch [Pause/Cancel] .
   1) Test **OK** - Normal
   2) Test **Fails** - Check Sensor. See Sensor Test Below.

SENSOR TEST (QUICK TEST)

1. With 2 fingers touch and hold the following pads at the same time :
   [Power Defrost] and [Sensor Reheat]

2. Observe diagnostic number in display (Numbers approximate).
   - **15-185** (Normal-verify with "detection test")
   - **213** or Higher (Sensor failed to open, sensor unplugged, wiring or smart board.)
   - Less then 6 (shorted sensor, or smart board).

***NOTE** : Only heater terminals (H ; Black and Red leads) can be checked with ohmmeter(30Ω).*

CAUTION : DO NOT ATTEMPT TO CHECK SENSOR TERMINALS (White and Orange leads).
♣ CAN DAMAGE SENSOR.

5-11 Output Power of Magnetron

CAUTION
MICROWAVE RADIATION

PERSONNEL SHOULD NOT ALLOW EXPOSURE TO MICROWAVE RADIATION FROM MICROWAVE GENERATOR OR OTHER PARTS CONDUCTING MICROWAVE ENERGY.

The output power of the magnetron can be measured by performing a water temperature rise test.

Equipment needed :

* Two 1-liter cylindrical borosilicate glass vessel (Outside diameter 190 mm)
* One glass thermometer with mercury column

NOTE: Check line voltage under load. Low voltage will lower the magnetron output. Make all temperature and time tests with accurate equipment.

1. Fill the one liter glass vessel with water.
2. Stir water in glass vessel with thermometer, and record glass vessel's temperature ("T_1", 10±1°C).
3. After moving the water into another glass vessel, place it in the center of the cooking tray. Set the oven to high power and operate for 41 seconds exactly. (3 seconds included as a holding time of magnetron oscillation:)
4. When heating is finished, stir the water again with the thermometer and measure the temperature ("T_2").
5. Subtract T_1 from T_2. This will give you the water temperature rise. (ΔT)
6. The output power is obtained by the following formula;

$$\text{Output Power} = \frac{4.187 \times 1000 \times \Delta T + 0.55 \times Mcx(T_2 - T_1)}{38}$$

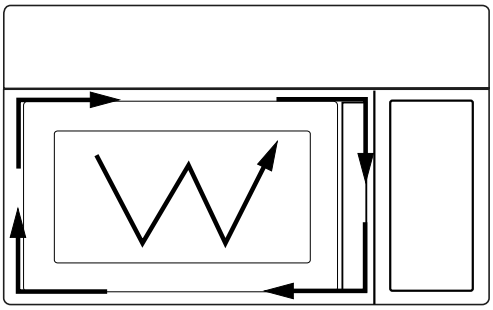
38 : Heating Time (sec)
41 : Counting Time (sec)
4.187 : Coefficient for Water
1000 : Water (cc)
ΔT : Temperature Rise (T_2-T_1)
To : Room Temperature
Mc : Cylindrical borosilicate glass weight

7. Normal temperature rise for this model is 9.9°C to 10.3°C at 'HIGH'.

NOTE 1: Variations or errors in the test procedure will cause a variance in the temperature rise. Additional power test should be made if temperature rise is marginal.

NOTE 2: Output power in watts is computed by multiplying the temperature rise (step 5) by a factor of 91 times the of centigrade temperature.

5-12 Procedure for Measurement of Microwave Energy Leakage

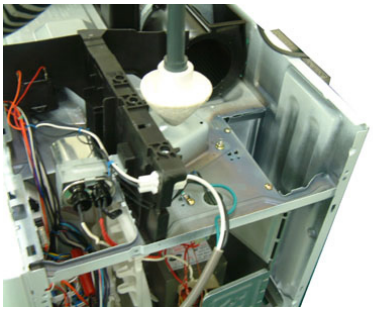


1) Pour 275±15cc of 20±5°C(68±9°F) water in a beaker which is graduated to 600cc, and place the beaker in the center of the oven.
2) Start to operate the oven and measure the leakage by using a microwave energy survey meter.
3) Set survey meter with dual ranges to 2,450MHz.
4) When measuring the leakage, always use the 2 inch spacer cone with the probe. Hold the probe perpendicular to the cabinet door. Place the spacer cone of the probe on the door and/or cabinet door seam and move along the seam, the door viewing window and the exhaust openings moving the probe in a clockwise direction at a rate of 1 inch/sec. If the leakage testing of the cabinet door seam is taken near a corner of the door, keep the probe perpendicular to the areas making sure that the probe end at the base of the cone does not get closer than 5cm to any metal. If it gets closer than 5cm, erroneous readings may result.
5) Measured leakage must be less than 4mW/cm^2 , after repair or adjustment.

Maximum allowable leakage is 5mW/cm^2 .
4mW/cm^2 is used to allow for measurement and meter accuracy

5-13 Check for Microwave Leakage

1. Remove the outer panel.
2. Pour 275±15cc of 20±5°C(68±9°F) water in a beaker which is graduated to 600cc, and place the beaker in the center of the oven.
3. Start the oven at the highest power level.
4. Set survey meter dual ranges to 2,450MHz.
5. Using the survey meter and spacer cone as described above, measure near the opening of magnetron, the surface of the air guide and the surface of the wave guide as shown in the following photo.(but avoid the high voltage components.) The reading should be less than 4mW/cm^2 .



5-14 Note on Measurement

1) Do not exceed the limited scale.
2) The test probe must be held on the grip of the handle, otherwise a false reading may result when the operator's hand is between the handle and the probe.
3) When high leakage is suspected, do not move the probe horizontally along the oven surface; this may cause damage to the probe.
4) Follow the recommendation of the manufacturer of the microwave energy survey meter.

5-15 Leakage Measuring Procedure

5-15-1 Record keeping and notification after measurement

1) After adjustment and repair of a radiation preventing device, make a repair record for the measured values, and keep the data.
2) If the radiation leakage is more than 4mW/cm^2 after determining that all parts are in good condition, functioning properly and the identical parts are replaced as listed in this manual notify that fact to ;

CENTRAL SERVICE CENTER

5-15-2 At least once a year have the microwave energy survey meter checked for accuracy by its manufacturer.

6. Troubleshooting

PRECAUTION

1. CHECK GROUNDING BEFORE CHECKING FOR TROUBLE.
2. BE CAREFUL OF THE HIGH VOLTAGE CIRCUIT.
3. DISCHARGE THE HIGH VOLTAGE CAPACITOR.
4. WHEN CHECKING THE CONTINUITY OF THE SWITCHES OR TRANSFORMER, DISCONNECT ONE LEAD WIRE FROM THESE PARTS AND THEN CHECK CONTINUITY WITHOUT THE POWER SOURCE ON. TO DO OTHERWISE MAY RESULT IN A FALSE READING OR DAMAGE TO YOUR METER.
5. DO NOT TOUCH ANY PART OF THE CIRCUIT OR THE CONTROL CIRCUIT BOARD, SINCE STATIC DISCHARGE MAY DAMAGE IT. ALWAYS TOUCH GROUND WHILE WORKING ON IT TO DISCHARGE ANY STATIC CHARGE BUILT UP.

6-1 Electrical Malfunction

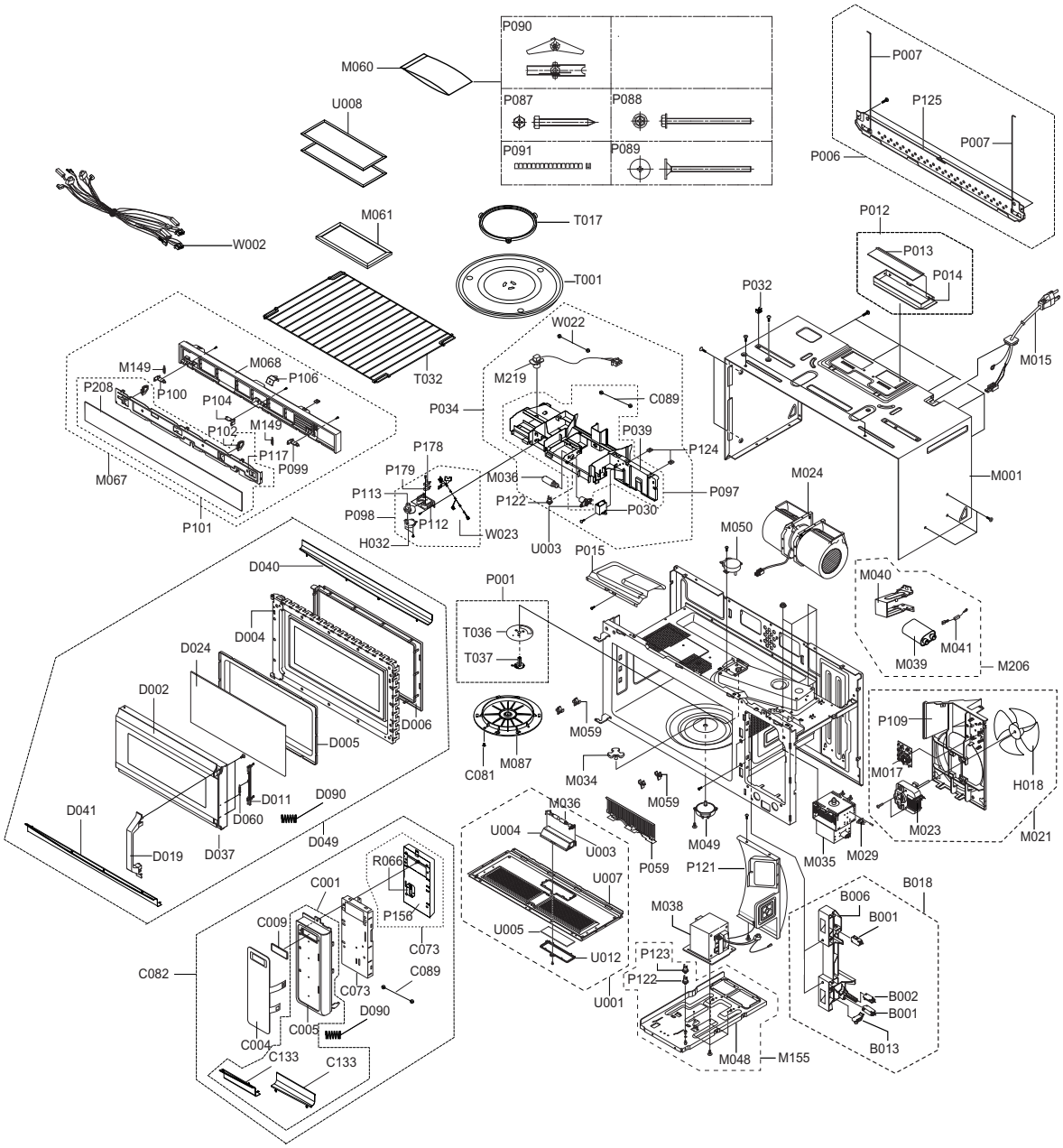
SYMPTOM	CAUSE	CORRECTIONS
Oven is dead. Fuse is OK. No display and no operation at all .	1. Open or loose lead wire harness 2. Open thermal cutout (Magnetron) 3. Open low voltage transformer 4. Defective Ass'y PCB	Check fan motor when thermal cutout is defective. Check Ass'y PCB when LVT is defective.
No display and no operation at all. Fuse is blown.	1. Shorted lead wire harness 2. Defective primary latch switch **(NOTE 1)** 3. Defective monitor switch **(NOTE1)** 4. Shorted HVCapacitor 5. Shorted HVTransformer **(NOTE2)**	Check adjustment of primary, interlock monitor, power relay, door sensing switch.
	NOTE 1: All of these switches must be replaced at the same time. (refer to adjustment instructions) Check continuity of power relay contacts and if it has continuity, replace power relay also. **NOTE 2**: When HVTransformer is replaced, check diode and magnetron also.	
Oven does not accept key input (Program)	1. Key input is not in-Sequence 2. Open or loose connection of membrane key pad to Ass'y PCB 3. Shorted or open membrane panel 4. Defective Ass'y PCB	Refer to operation procedure. Replace PCB main.
Timer starts countdown but no microwave oscillation. (No heat while oven lamp and fan motor turn on.)	1. Off-alignment of latch switches 2. Open or loose connection of high voltage circuit especially magnetron filament circuit **NOTE**: Large contact resistance will bring lower magnetron filament voltage and cause magnetron to lower output and/or intermittent oscillation. 3. Defective high voltage components H.V.Transformer H.V. Capacitor H.V.Diode, H.V.Fuse Magnetron 4. Open or loose wiring of power relay 5. Defective primary latch switch 6. Defective power relay or Ass'y PCB	Adjust door and latch switches. Check high voltage component according to component test procedure and replace if it is defective. Replace PCB main.

6-1 Electrical Malfunction(continued)

SYMPTOM	CAUSE	CORRECTIONS
Oven lamp and fan motor turn on	1. Misadjustment or loose wiring of primary latch switch 2. Defective primary latch switch	Adjust door and latch switches.
Oven can program but timer does not start.	1. Open or loose wiring of secondary i nterlock switch 2. Off-alignment of primary interlock 3. Defective secondary interlock S/W	Adjust door and interlock switches.
Microwave output is low;. Oven takes longer time to cook food.	1. Decrease in power source voltage. 2. Open or loose wiring of magnetron filament circuit. (Intermittent oscillation)) 3. Aging of magnetron	Consult electrician.
Fan motor turns on when plugged in	Loose wiring of door sensing switch	Check wire of door sensing switch.
Oven does not operate and return to the plugged in mode.	Defective Ass'y PCB	Replace PCB main.
Loud buzzing noise can be heard.	1. Loose fan and fan motor 2. Loose screws on H.V.Transformer 3. Shorted H.V.Diode	Tighten screws of fan motor. Tighten screws of H.V.Transformer. Replace H.V.Diode.
Turntable motor does not rotate.	1. Open or loose wiring of turntable motor. 2. Defective turntable motor.	Replace turntable motor.
Oven stops operation during cooking	1. Open or loose wiring of primary interlock switch 2. Operation of thermal cutout (Magnetron)	Adjust door and latch switches.
Sparks	1. Metallic ware or cooking dishes touching on the oven wall. 2. Ceramic ware trimmed with gold or silver powder also causes sparks.	Inform the customer. Do not use any type of cookware with metallic trimming.
Uneven cooking	Uneven intensity of microwave due to its characteristics.	Wrap thinner parts of the food with aluminum foil. Use plastic wrap or cover with a lid. Stir once or twice while cooking foods such as soup, cocoa, or milk.
Noise from the turntable motor when it starts to operate.	Noise may result from the motor.	Replace turntable motor.
Display error1	Shorted sensor's circuit.	Let oven cool for at least 5minutes. Check connection of the sensor if the sensor's circuit was shorted or not by the alien substance.
Display error2	Open sensor's circuit.	Check connection of sensor's wire.
Display error3	On the cooling mode, sensor's Vout was not less than 4.7V within 3minutes.	Let oven cool for at least 5minutes.
Display error4	On the way to sensing, the door was open.	Press the 'pause/cancel'pad, and then you have to do all over again.

7. Exploded Views and Parts List

7-1 Exploded Views



7-2 Main Parts List

(S.N.A : SERVICE NOT AVAILABLE)

LEVEL	No	Code No.	Description	Specification	Q'ty	SA/SNA	Remark
1-1	M036	4713-001013	LAMP-INCANDESCENT	130V,-,40W,ORG,E17/20,	1	SA	ASSY DUCT UPPER
1-1	M038	DE26-00082D	TRANS H.V	SHV-U1870B,120V,60HZ,2460/2220	1	SA	
1-1	M024	DE31-00029B	MOTOR VENTILATION	SMV-460UA-1,SMH7175WE/	1	SA	
1-1	M049	DE31-10172A	MOTOR-SYNCHRONOUS	M2HJ24Z709,ST-16F,21V,	1	SA	T/T
1-1	M050	DE31-10173A	MOTOR-SYNCHRONOUS	M2HJ29A709,ST-16F,21V,	1	SA	S/T
1-1	M029	DE47-20007A	THERMOSTAT	PW-2N(160/60)187Z,250V7.5A,16	1	SA	MGT
1-1	M059	DE61-00375A	HOLDER-RACK	OTR-1.5CUFT,PP,-,-,-,-,-	4	SA	
1-1	P121	DE61-00411A	BRACKET-DUCT REAR	SMH7175,SECC,T0.5,W200	1	SA	
1-1	P059	DE63-00138A	COVER-FRONT	SMH7175,SECC,T0.5,W100,L200,	1	SA	
1-1	U008	DE63-00196A	FILTER-AIR	SMH7175,AL-MESH,T2.0,W150,L34	2	SA	
1-1	M061	DE63-30016D	FILTER-CHARCOAL	SMH7175,AL,T10,W222,L100	1	SA	
1-1	M001	DE64-00754A	PANEL-OUTER	SMH7175,V/STEEL,TO.5+0.2,W40	1	SA	
1-1	C081	DE66-20095B	BUTTON-LOCK	-,-,OTR5,-,-,TB53)	1	SA	
1-1	M034	DE67-00179A	COUPLER	SMH7175,SPS,BRN,-,-,-	1	SA	
1-1	M087	DE71-60121A	COVER-STIRRER	-,PP,T2.0,W7,L198,-,85G,-	1	SA	
1-1	T001	DE74-20002A	TRAY-COOKING	GLASS,T6,-,-	1	SA	
1-1	P012	DE92-90242A	ASSY-HOOD DAMPER	JVM-250BL,OTR4,-,-,-,-	1	SA	
1-2	P013	DE71-60051A	COVER-DAMPER	-,FESN5,T0.22,W68,L248.4,-,	1	SA	
1-2	P014	DE72-40022A	DAMPER-MAIN	-,SECC,-,W28,L650,OTR4,-,T0.	1	SA	
1-1	M060	DE92-90505E	ASSY-HARD WARE	SMH7175,-,-,-	1	SA	
1-2	P087	DE60-10111A	SCREW-LAG	-,-,-,-,MSWR,W1/4X50,-,-,-,-	1	SA	
1-2	P088	DE60-20022A	BOLT-TOGGLE	MSWR,W3/16X75,-,-,-,-,-,-,-	3	SA	
1-2	P089	DE60-20066A	BOLT-FLAT	UNF1/4,L110,MSWR10,-,-,OTR6,-,	3	SA	
1-2	P090	DE60-30022A	NUT-TOGGLE	SBC1,ZPC2,WHT,-,-,-,-,-,-	3	SA	
1-2	P091	DE63-10011A	GROMMET	-,MS,-,-,-,DACB-16,-,-,-	2	SA	
1-1	P032	DE92-90508A	ASSY-HOLDER NUT	OTR6,-,-,-,-,-	1	SA	
1-1	B018	DE96-00082C	ASSY BODY LATCH	SMH7175WE/XAA,-	1	SA	
1-2	B002	3405-001033	SWITCH-MICRO	125/250VAC 16A,200GF,SPSTNC	1	SA	MONITOR
1-2	B001	3405-001034	SWITCH-MICRO	125/250VAC,16A,200GF,SPST-N	2	SA	
1-2	B006	DE66-00084A	BODY-LATCH	JVM-1860,PBT,-,-,-,-,-	1	SA	
1-2	B013	DE66-90106B	LEVER-SWITCH LOWER	PBT,T2.0,-,-,2.0g,OTR	1	SA	
1-1	M015	DE96-00218A	ASSY-POWER CORD	OTR9,120V60HZ,GE,SJT3/14	1	SA	
1-1	M155	DE96-00268A	ASSY BASE PLATE	SMH7175,B/PLATE+TCO	1	SA	
1-2	P123	DE47-20034A	THERMOSTAT	40/70,M5,-,-,-,-,-,-	1	SA	
1-2	P122	DE47-20059A	THERMOSTAT	PW-2N(8XV),125V15A,V,120/0,23	1	SA	
1-2	M048	DE61-00415A	BASE-PLATE	SMH7175,SECC,T0.8,-,-,-,-	1	SA	
1-1	M206	DE96-00269A	ASSY-HVC	SMH7175,0.91UF HVC	1	SA	
1-2	M039	2501-001011	C-OIL	910nF,2100V,BK,54x35x75mm,20mm	1	SA	
1-2	M040	DE61-00115A	BRACKET-HVC	SMH7175,SECC,T0.6,-,-,-,-	1	SA	
1-2	M041	DE91-70063D	ASSY-HVD	HV03-12,MWO-GE,RED	1	SA	
1-1	W002	DE96-00490A	ASSY-WIRE HARNESS A	SMH7178STE/XAA,120V/	1	SA	
1-1	U001	DE97-00360A	ASSY-BASE BOTTOM	SMH7175,INCANDESCENT LA	1	SA	
1-2	M036	4713-001013	LAMP-INCANDESCENT	130V,-,40W,ORG,E17/20,	2	SA	

7-2 Main Parts List

(S.N.A : SERVICE NOT AVAILABLE)

LEVEL	No	Code No.	Description	Specification	Q'ty	SA/SNA	Remark
1-2	U003	DE47-00006A	HOLDER-LAMP	-,250V,75W,250X187 2POLE,OTR	2	SA	
1-2	U007	DE61-00406B	BASE-BOTTOM	SMH7175,SECC,T0.5,W354.5,L75	1	SA	
1-2	U004	DE61-00407A	BRACKET-BOTTOM LAMP	SMH7175,SECC,T0.4,-,	1	SA	
1-2	U012	DE63-00137B	COVER-GLASS COOKTOP	SMH7175,SECC,T0.5,W9	1	SA	
1-2	U005	DE64-00911A	GLASS-COOKTOP LAMP	SMH7175,TEMP-GLASS,T2	1	SA	
1-1	P006	DE97-00363A	ASSY-MOUNTING PLATE	SMH7175,MOUNTING+WIR	1	SA	
1-2	P125	DE66-00121A	WIRE-MOUNTING	SMH7175,MSWR10,ZNC2,-,-	2	SA	
1-2	P007	DE70-00378A	PLATE-MOUNTING	SMH7175,SECC ,-,T0.8,W130	2	SA	
1-1	M021	DE97-00365C	ASSY-COVER MOTOR	SMH7175/SMH7178,ASSY-NO	1	SA	
1-2	M023	DE31-10177E	MOTOR FAN	SMF-1850UA1,SMH7175WC,-,60HZ,-	1	SA	
1-2	H018	DE31-90051A	BLADE-FAN	P.P,T,D130,-,-,-,-	1	SA	
1-2	P109	DE63-00141A	COVER-MOTOR	SMH7175,PP(FB53),T2.5,-,-,-	1	SA	
1-2	M017	DE96-00400B	ASSY NOISE FILTER	SN-UF12B,250V20A,OTR10	1	SA	
1-1	P034	DE97-00366D	ASSY-DUCT UPPER	SMH7178,HUMIDITY SENSOR,	1	SA	
1-2	W022	DE39-30099A	LEAD WIRE-F	L140,JVM-1340BW,-,-,-,-,-	1	SA	
1-2	P122	DE47-20059A	THERMOSTAT	PW-2N(8XV),125V15A,V,120/0,23	1	SA	
1-2	P030	DE59-50002A	CAPACITOR-MOTOR	SH-M 10UF,220V10UF,-,DMB	1	SA	
1-2	P098	DE97-00181A	ASSY-CAM LOUVER	JVM-1860,ASSEMBLY,-,-	1	SA	
1-3	P178	3405-001050	SWITCH-MICRO	125V,0.1A,60GF,SPNC	1	SA	
1-3	P179	3405-001051	SWITCH-MICRO	125V,0.1A,60GF,SPNO	1	SA	
1-3	H032	DE31-10154C	MOTOR DRIVE	M2CK59ZT69-H,-,-,120V60HZ,-,	1	SA	
1-3	W023	DE39-00253A	WIRE HARNESS-CAM	JVM-1860,-,-,-,-,-,-,-,	1	SA	
1-3	P112	DE61-00118A	BRACKET-CAM PLATE	JVM-1860,SCP,T2.0,W60.	1	SA	
1-3	P113	DE72-00145A	CAM-LOUVER	JVM-1860,POM(KEPITAL FE-22),-	1	SA	
1-2	P097	DE97-00371B	ASSY-DUCT UPPER(SUB)	JMV8186,HUMIDITY-SE	1	SA	
1-3	U003	DE47-00006A	HOLDER-LAMP	-,250V,75W,250X187 2POLE,OTR	1	SA	
1-3	P039	DE67-00168A	DUCT-UPPER	SMH7175,PP,T2.0,BLK,-,-,-	1	SA	
1-3	M219	DE97-00585A	ASSY-SENSOR HUMIDITY	SMH7175WE/XAA,-,HUM	1	SA	
1-3	C089	DE39-40673F	WIRE HARNESS-H	SMH7175WE/XAA,-,-,-,-,-,-	1	SA	
1-1	P001	DE97-00367A	ASSY-STIRRER	SMH7175,H/STIRRER+B/STIRRER	1	SA	
1-2	T036	DE31-00023A	BLADE-STIRRER	SMH7175,ALP1050,-,-,PI82,T	1	SA	
1-2	T037	DE61-00505A	HOLDER-STIRRER	SMH7175,SPS,-,-,-,-,-	1	SA	
1-1	T017	DE97-00368A	ASSY-GUIDE ROLLER	SMH7175,SPS,G/ROLLER+R	1	SA	
1-1	T030	DE75-00036A	WIRE RACK	SMH7175,SNC2,D5,-,-,-,-,-	1	SA	
1-1	P015	DE97-00411A	ASSY-BKT DUCT UPPER	SMH7175BC,BKT-DUCT U	1	SNA	
1-1	M067	DE97-00496A	ASSY-GRILLE	SMH7178,-,-,-	1	SA	
1-2	P099	DE61-00128A	HINGE-GRILLE(R)	JVM-1860,SECC,T0.8,-,-,-	1	SA	GRILLE
1-2	P100	DE61-00129A	HINGE-GRILLE(L)	JVM-1860,SECC,T0.8,-,-,-	1	SA	GRILLE
1-2	P104	DE61-00177A	HINGE-GRILLE(M)	JVM-3660,SECC,T1.6,-,-,-	1	SA	GRILLE
1-2	M149	DE61-00527A	SPRING-LOUVER	JVM-2070,HSWR,-,-,-,-,-,-	2	SA	
1-2	P106	DE63-00244A	EARTH-GRILLE	SMV9165,STS301,T0.15,W13.5,	1	SA	GRILLE
1-2	M068	DE64-01294A	GRILLE	SMH7178,PC,T2.5,W75,L757,-,BLK,-	1	SA	
1-2	P101	DE97-00497A	ASSY-COVER GRILLE	SMH7178,CHASSIS+BKT-C/	1	SA	

7-2 Main Parts List

(S.N.A : SERVICE NOT AVAILABLE)

LEVEL	No	Code No.	Description	Specification	Q'ty	SA/SNA	Remark
1-3	P102	DE61-00150A	BRACKET-BARRIER GR	JVM-1860,SECC,T0.5,-,	1	SA	GRILLE
1-3	P117	DE61-00672A	BRACKET-COVER GRILLE	SMH7178,SECC,T1.2,W	1	SNA	
1-3	P208	DE64-01296A	CHASSIS-GRILLE	SMH7178,STS430 #4,T0.5,W7	1	SNA	
1-1	M035	OM75P(10)ERHN	ASSY-MAGNETRON	OM75P(10)ERHN	1	SA	

7-3 Control & Door Parts List

(S.N.A : SERVICE NOT AVAILABLE)

LEVEL	No	Code No.	Description	Specification	Q'ty	SA/SNA	Remark
1-1	D049	DE94-01118A	ASSY DOOR	SMH7178,BLK,PREMIUM	1	SA	
1-2	D060	6107-001175	SPRING-ES	HSWR,BLUING,PI0.95,D8.5,L49.4,	1	SA	
1-2	D005	DE01-00127A	FILM-DOOR	JVM-1860,POLYESTER,-,L479,T0.0	1	SA	
1-2	D090	DE63-00289A	EARTH-SPRING	SMH7178,HSWR,T0.4,OD5,L9.9,	2	SNA	
1-2	D006	DE64-00759A	DOOR-C	SMH7175,PP,T1.5,-,-,-,BLK,-	1	SA	
1-2	D011	DE64-00760A	KEY-DOOR	SMH7175,PBT,-,-,BLK,-,-	1	SA	
1-2	D019	DE64-01293A	HANDLE-DOOR	SMH7178,AL,-,W28.3,L254.5,-,	1	SA	
1-2	D004	DE94-00882B	ASSY DOOR-E(COATING)	SMH7175BC,BLK-COATI	1	SA	
1-2	D037	DE94-01117A	ASSY DOOR-A	SMH7178,BLK,SCREEN ADHESION	1	SA	
1-3	D024	DE64-01292A	SCREEN-DOOR(B)	SMH7178,TEMP-GLASS,T3.2,W	1	SA	
1-3	D002	DE64-01295A	DOOR-A	SMH7178,PC,T2.5,L619,W327,-,BLK,-	1	SA	
1-3	D040	DE64-01299A	CHASSIS-DOOR(U)	SMH7178,STS430 #4,T0.5,W	1	SNA	
1-3	D041	DE64-01300A	CHASSIS-DOOR(L)	SMH7178,STS430 #4,T0.5,W	1	SNA	
1-1	C082	DE94-01120D	ASSY CONTROL-BOX	120V/60HZ,SMH7178STE/XA	1	SA	
1-2	C089	DE39-40673A	WIRE HARNESS-H	120V60HZ,OTR6 ALL MODEL,G	1	SA	
1-2	D090	DE63-00289A	EARTH-SPRING	SMH7178,HSWR,T0.4,OD5,L9.9,	1	SNA	
1-2	C009	DE64-00766B	WINDOW-DISPLAY	4150,SAN,T2.0,W37,L84,YEL	1	SA	
1-2	C001	DE94-01119A	ASSY CONTROL-PANEL	120V/60HZ,SMH7178,BLK	1	SA	
1-3	C133	DE64-01297A	CHASSIS-PANEL(U)	SMH7178,STS430 #4,T0.5,	1	SNA	
1-3	C133	DE64-01298A	CHASSIS-PANEL(L)	SMH7178,STS430 #4,T0.5,	1	SNA	
1-3	C005	DE64-01302A	PANEL-CONTROL	SMH7178,PC,T2.5,W138.5,L32	1	SNA	
1-2	C073	DE97-00498B	ASSY-BRACKET C/PANEL	SMH7178STE/XAA,C/PA	1	SA	
1-3	R066	DE61-00266A	BRACKET-PCB	MO1650WA,SECC,T0.5,-,-,-,-	1	SA	
1-3	P156	DE61-00673A	BRACKET-CONTROL PANEL	SMH7178,SECC,T0.5,	1	SA	
1-2	C004	DE34-00205C	SWITCH MEMBRANE	SMH7178STE/XAA,-,129.1,P	1	SA	

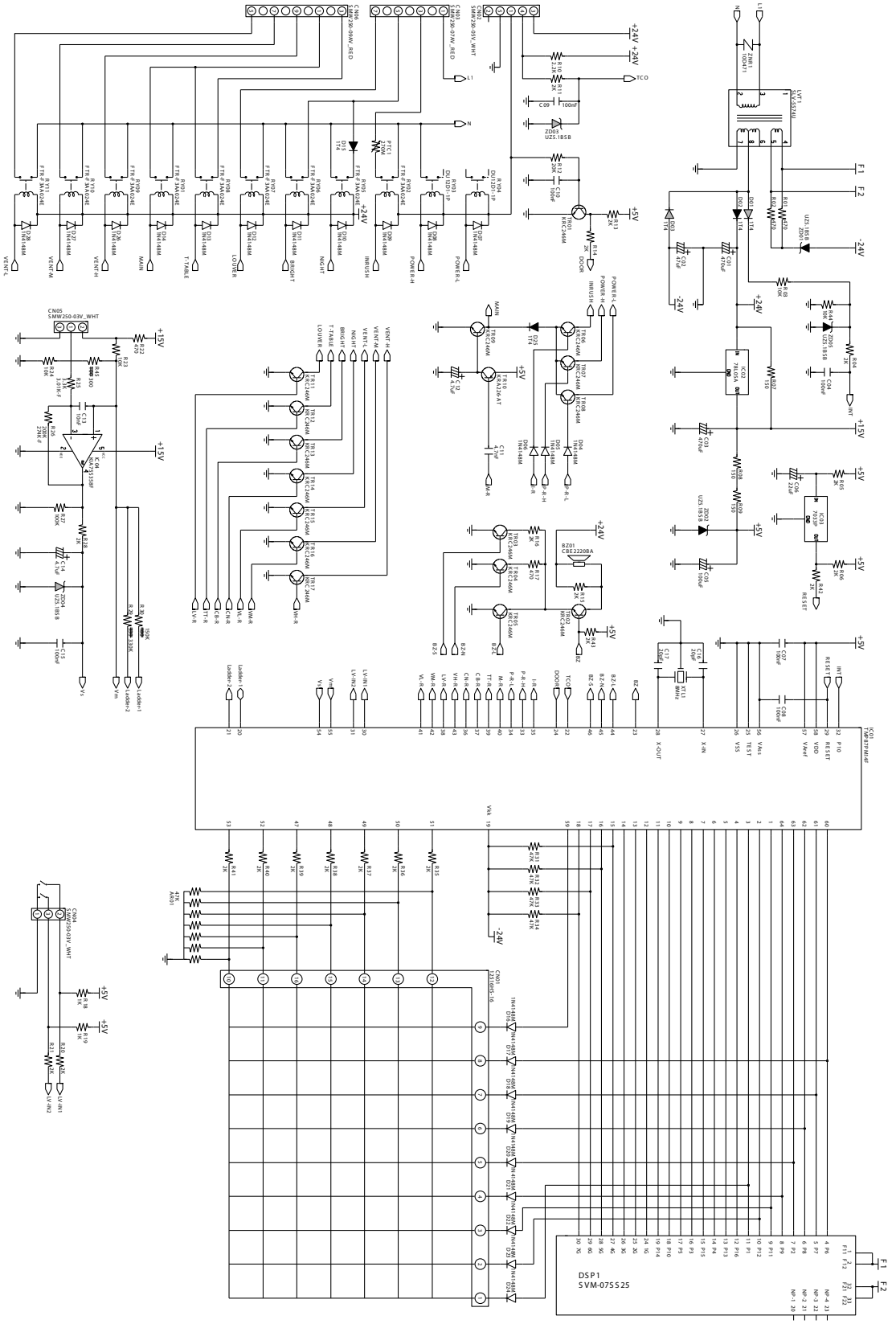
7-4 Standard Parts List

(S.N.A : SERVICE NOT AVAILABLE)

Level	Code No	Description	Specification	Q'ty	Remark	SA/SNA
1-2	DE60-20066A	BOLT-FLAT	UNF1/4,L110,MSWR10,-,-,OTR6,-,	3	SA	
1-2	DE60-20022A	BOLT-TOGGLE	MSWR,W3/16X75,-,-,-,-,-,-,-	3	SA	
1-1	DE60-30015A	NUT-FLANGE	M5,P0.8,MSWR10,FEFZY,-,-,-,-,-	4	SA	MGT
1-3	DE60-30063A	NUT-MOUNTING	-,M6.3,S10C,ZNC,YEL,-,-,-,-	2	SA	
1-2	DE60-30022A	NUT-TOGGLE	SBC1,ZPC2,WHT,-,-,-,-,-,-	3	SA	
1-1	DE60-10082I	SCREW-A	-,-,-,-,2S-4X12,FEFZY,-,-,-,-	1	SA	ASSY HVC
1-1	DE60-10082I	SCREW-A	-,-,-,-,2S-4X12,FEFZY,-,-,-,-	1	SA	BASE PLATE
1-1	DE60-10082I	SCREW-A	-,-,-,-,2S-4X12,FEFZY,-,-,-,-	3	SA	BKT DUCT REAR
1-1	DE60-10082I	SCREW-A	-,-,-,-,2S-4X12,FEFZY,-,-,-,-	2	SA	BKT MOUNTING PLATE
1-1	DE60-10082I	SCREW-A	-,-,-,-,2S-4X12,FEFZY,-,-,-,-	2	SA	DUCT UPPER
1-1	DE60-10082I	SCREW-A	-,-,-,-,2S-4X12,FEFZY,-,-,-,-	2	SA	FAN MOTOR
1-1	DE60-10082I	SCREW-A	-,-,-,-,2S-4X12,FEFZY,-,-,-,-	4	SA	P/OUTER
1-1	DE60-10082I	SCREW-A	-,-,-,-,2S-4X12,FEFZY,-,-,-,-	1	SA	VENT MOTOR
1-2	DE60-10082I	SCREW-A	-,-,-,-,2S-4X12,FEFZY,-,-,-,-	1	SA	
1-2	DE60-10082I	SCREW-A	-,-,-,-,2S-4X12,FEFZY,-,-,-,-	1	SA	N/FILTER SCREW
1-2	DE60-10111A	SCREW-INCH MACH	-,-,-,-,MSWR,W1/4X50,-,-,-,-	1	SA	
1-1	6002-000643	SCREW-TAPPING	TH,+,2S,M4,L10,ZPC(YEL),SWRCH1	1	SA	CAVITY FRONT
1-1	6002-001170	SCREW-TAPPING	FH,STAR,2,M4,L12,SIL,SWRCH18A	2	SA	B/D-LATCH
1-1	6002-001173	SCREW-TAPPING	FH,+,2S,M4,L12,ZPC(BLK),MSWR	2	SA	GRILLE
1-1	6002-001173	SCREW-TAPPING	FH,+,2S,M4,L12,ZPC(BLK),MSWR	1	SA	P/OUTER
1-1	6006-001170	SCREW-TAPPING	TH,+,WT,TC,M4,L10,ZPC(YEL),SWRCH18A,-	1	SA	P-CORD
1-1	6006-001175	SCREW-TAPPING	WS,TH,+,M4,L8,ZPC(YEL)	1	SNA	ASSY HVD
1-1	DE60-10045A	SCREW-TAPPING	-,-,FEFZY,-,PH,M3,-,L6,-,-	2	SA	MGT TCO
1-1	DE60-10051A	SCREW-TAPPING	-,-,MSWR,-,PH,M4,-,L6,-,-	1	SA	S.T MOTOR
1-1	DE60-10051A	SCREW-TAPPING	-,-,MSWR,-,PH,M4,-,L6,-,-	1	SA	TURNTABLE MOTOR
1-1	DE60-10062A	SCREW-TAPPING	-,-,FEFZB,-,TH,M4,-,L12,-,-	1	SA	BKT D/UPPER
1-1	DE60-10062A	SCREW-TAPPING	-,-,FEFZB,-,TH,M4,-,L12,-,-	1	SA	C/BOX
1-1	DE60-10067A	SCREW-TAPPING	-,-,FEFZB,2-SLOT,TH,M4,-,L8,-	1	SA	ASSY HOOD DAMPER
1-1	DE60-10067A	SCREW-TAPPING	-,-,FEFZB,2-SLOT,TH,M4,-,L8,-	5	SA	BASE BOTTOM
1-1	DE60-10067A	SCREW-TAPPING	-,-,FEFZB,2-SLOT,TH,M4,-,L8,-	8	SA	P/OUTER
1-1	DE60-10080A	SCREW-TAPPING	-,-,-,-,M5,L12,-,2S,-,-	4	SA	HVT
1-2	6002-000643	SCREW-TAPPING	TH,+,2S,M4,L10,ZPC(YEL),SWRCH1	2	SA	
1-2	DE60-10051A	SCREW-TAPPING	-,-,MSWR,-,PH,M4,-,L6,-,-	1	SA	
1-2	6002-000630	SCREW-TAPPING	PH,+,-,2S,M3,L8,ZPC(YEL),SWRCH18A,-	4	SNA	PCB
1-2	DE60-10045A	SCREW-TAPPING	-,-,FEFZY,-,PH,M3,-,L6,-,-	1	SA	BT-TCO
1-2	DE60-10067A	SCREW-TAPPING	-,-,FEFZB,2-SLOT,TH,M4,-,L8,-	1	SA	
1-2	6002-001004	SCREW-TAPPING	TH,+,2,M4,L30,ZPC(YEL),SWRCH18	2	SNA	
1-2	DE60-10062A	SCREW-TAPPING	-,-,FEFZB,-,TH,M4,-,L12,-,-	2	SA	
1-3	6002-001169	SCREW-TAPPING	PH,+,2S,M3,L25,ZPC(YEL),MSWR10	2	SA	MICRO-S/W
1-3	DE60-10051A	SCREW-TAPPING	-,-,MSWR,-,PH,M4,-,L6,-,-	2	SA	MOTOR-DRIV
1-3	6002-000630	SCREW-TAPPING	PH,+,-,2S,M3,L8,ZPC(YEL),SWRCH18A,-	2	SNA	HUMIDITY SENSOR
1-2	6002-000643	SCREW-TAPPING	TH,+,2S,M4,L10,ZPC(YEL),SWRCH1	3	SA	HINGE-GRILLE

8. P.C.B Diagrams

8-1 P.C.B Diagrams (This Document can not be used without Samsung's authorization)



8-2 P.C.B Parts List

(S.N.A : SERVICE NOT AVAILABLE)

LEVEL	Code No.	Description	Specification	Q'ty	SA/ SNA	Remark
1-1	0204-001118	FLUX	SV-95-1F,C19H29COOH,C3H7OH,-,1	1	SNA	
1-2	0401-001002	DIODE-SWITCHING	1N4148M,100V,200mA,DO-34,TP	23	SNA	D04~D14,D16~D24, D26~D28
1-2	0402-001103	DIODE-RECTIFIER	1T4,400V,1A,SOD-106,TP	5	SNA	D01~D03,D15,D25
1-2	0403-000355	DIODE-ZENER	UZ5.1BSB,5-5.2V,500MW,DO-35,TP	4	SNA	ZD01,ZD03~ZD05
1-2	0504-001044	TR-DIGITAL	KRA226M,PNP,400MW,2.2K/10K,TO-92M,TP	1	SNA	TR10
1-2	0504-001178	TR-DIGITAL	KRC246M,NPN,400mW,2.2K/10Kohm,TO-92M,TP	14	SNA	TR01,TR02,TR05~TR09,TR11~TR17
1-2	1201-001125	IC-OP AMP	75S01,SOP,5P,63MIL,SINGLE,100d	1	SA	IC04
1-2	1203-001037	IC-POSI.FIXED REG.	78L05,SOT-89,3P,185MIL,PLASTIC	1	SNA	IC05
1-2	1203-001238	IC-POSI.ADJUST REG.	78L15,TO-92,3P,-,PLASTIC,14.4/	1	SNA	IC02
1-2	1203-001238	THERMISTOR-PTC	27ohm,20%,-,265V,1.5A,360mA,BK	1	SNA	PTC1
1-2	1405-000001	VARISTOR	470V,1250A,14x7.5mm,TP	1	SA	ZNR1
1-2	2001-000009	R-CARBON	20KOHM,5%,1/8W,AA,TP,1.8X3.2MM	1	SNA	R12
1-2	2001-000062	R-CARBON	470OHM,5%,1/4W,AA,TP,2.4X6.4MM	1	SNA	R22
1-2	2001-000273	R-CARBON	100KOHM,5%,1/8W,AA,TP,1.8X3.2MM	1	SNA	R27
1-2	2001-000290	R-CARBON	10KOHM,5%,1/8W,AA,TP,1.8X3.2MM	2	SNA	R03,R44
1-2	2001-000429	R-CARBON	1KOHM,5%,1/8W,AA,TP,1.8X3.2MM	2	SNA	R18,R19
1-2	2001-000446	R-CARBON	2.2KOHM,5%,1/2W,AA,TP,3.3X9MM	1	SNA	R10
1-2	2001-000577	R-CARBON	2KOHM,5%,1/8W,AA,TP,1.8X3.2MM	19	SNA	R04~R06,R11,R13~R15,R20,R21,R28,R35~R43
1-2	2001-000780	R-CARBON	470OHM,5%,1/8W,AA,TP,1.8X3.2MM	2	SNA	R01,R02
1-2	2001-000786	R-CARBON	47KOHM,5%,1/8W,AA,TP,1.8X3.2MM	4	SNA	R31~R34
1-2	2004-000218	R-METAL	10Kohm,1%,1/8W,AA,TP,1.8x3.2mm	2	SNA	R23,R24
1-2	2004-000517	R-METAL	200Kohm,1%,1/8W,AA,TP,1.8x3.2m	1	SNA	R26
1-2	2004-001978	R-METAL	300ohm,1%,1/8W,AA,TP,1.8x3.2mm	1	SNA	R45
1-2	2004-004255	R-METAL	3.32Kohm,1%,1/8W,AA,TP,1.68x3.81mm	1	SNA	R25
1-2	2004-005091	R-METAL	249Kohm,1%,1/8W,AA,TP,1.8x3.2mm	1	SNA	R29
1-2	2004-005092	R-METAL	348Kohm,1%,1/8W,AA,TP,1.8x3.2mm	1	SNA	R30
1-1	2011-000777	R-NET	47Kohm,5%,1/8W,A,SIP,8P,TP	1	SNA	AR01
....2	2203-000192	C-CER,CHIP	100nF,+80-20%,50V,Y5V,TP,2012,	6	SNA	C04,C07~C10,C15
1-2	2203-000260	C-CER,CHIP	10nF,10%,50V,X7R,2012	1	SNA	C13
1-2	2203-000889	C-CER,CHIP	4.7nF,10%,50V,X7R,TP,2012	1	SNA	C11
1-2	2401-000244	C-AL	100uF,20%,10V,GP,TP,6.3x7,5	1	SNA	C05
1-2	2401-000911	C-AL	22uF,20%,16V,GP,TP,5x7,5	1	SNA	C06
1-2	2401-001415	C-AL	470uF,20%,35V,GP,TP,10x20,5	1	SNA	C03
1-2	2401-001573	C-AL	47uF,20%,50V,GP,TP,6.3x11,2.5	1	SNA	C02
1-2	2401-002075	C-AL	4.7uF,20%,50V,GP,TP,5x11,5	2	SNA	C12,C14
1-2	2401-002216	C-AL	2200uF,20%,35V,GP,TP,16x25,7.5	1	SNA	C01
1-2	2802-000188	RESONATOR-CERAMIC	8MHz,0.5%,TP,10.0x5.0x8.0mm	1	SNA	XTL1
1-1	3501-000256	RELAY-POWER	24VDC,1200VA,22MA,-,9MS,5MS	2	SNA	RY03,RY04
1-1	3501-001155	RELAY-MINIATURE	24VDC,200MW,3000MA,1FORMA,10MS,10MS	9	SA	RY01,RY02,RY05~RY11
1-1	3708-001550	CONNECTOR-FPC/FFC/PIC	16P,1.25MM,STRAIGHT,SN,ZIF,-,SINGLE	1	SNA	CN01
1-1	3711-000024	CONNECTOR-HEADER	BOX,3P,1R,2.5MM,STRAIGHT,SN,WHT	1	SNA	CN04

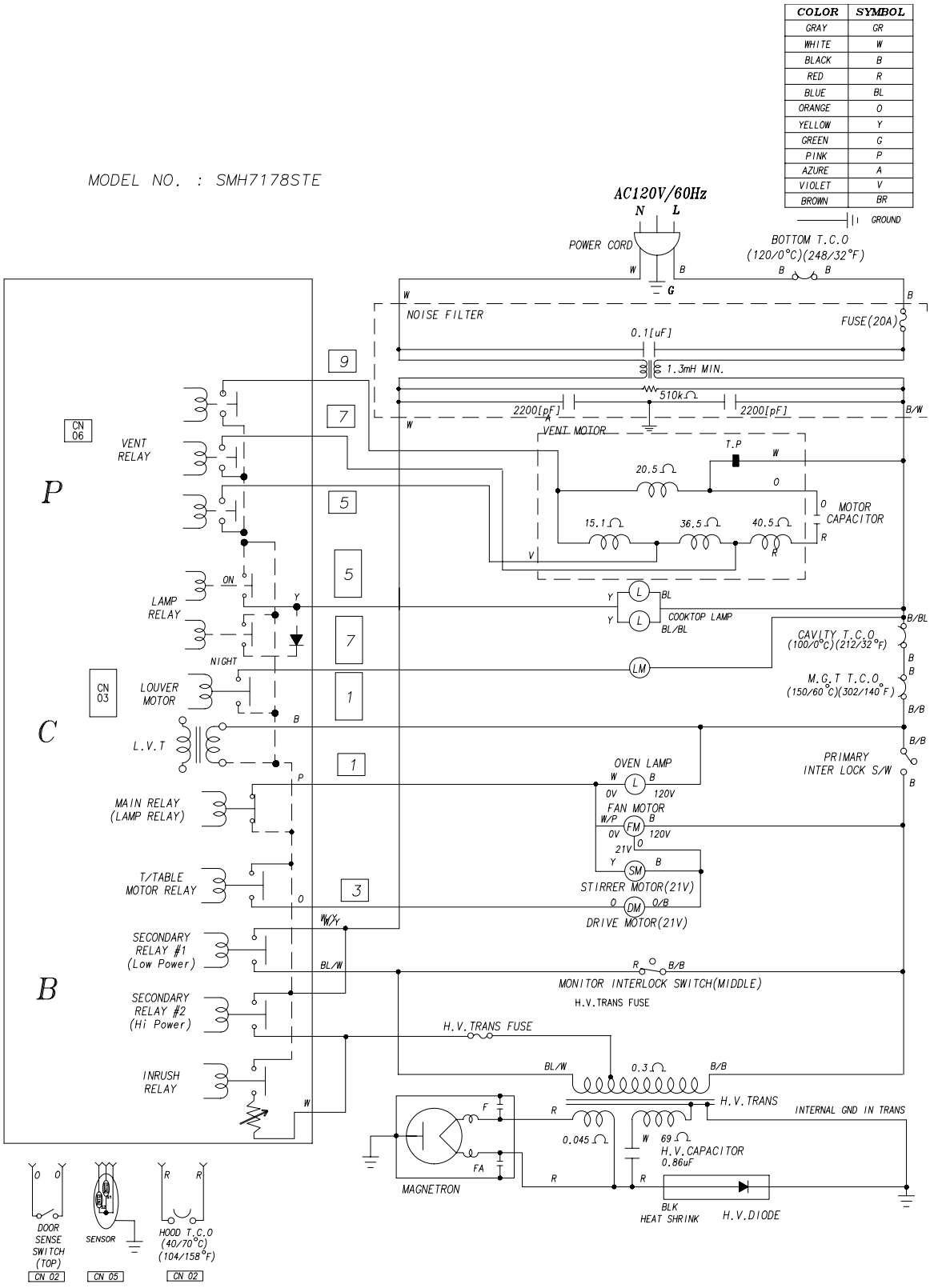
8-2 P.C.B Parts List(continued)

(S.N.A : SERVICE NOT AVAILABLE)

LEVEL	Code No.	Description	Specification	Q'ty	SA/ SNA	Remark
1-1	3711-000879	CONNECTOR-HEADER	BOX,3P,1R,2.5mm,STRAIGHT,SN	1	SNA	CN05
1-1	3711-000999	CONNECTOR-HEADER	BOX,5P,1R,2.5mm,STRAIGHT,SN	1	SNA	CN02
1-1	3711-004200	CONNECTOR-HEADER	BOX,4P/7P,1R,2.5MM,STRAIGHT,SN,RED	1	SNA	CN03
1-1	3711-004201	CONNECTOR-HEADER	BOX,6P/9P,1R,2.5MM,STRAIGHT,SN	1	SNA	CN06
1-1	DE07-10035A	VF DISPLAY	SVM-07SS10,SEA,-,-,-	1	SA	DSP1
1-2	DE09-00499A	IC MICOM	TMP87CM14F-CHUN,SMH7178,64 PIN,+5V,-,-,-,-,-,QFP,TRAY,-,-,-20 ~ +85	1	SNA	IC01
1-2	DE13-20009A	IC	KA7533,DIP,-,-,-,-,-	1	SNA	IC03
1-1	DE26-20144A	TRANS L.V	SLV-5574U,120V,60HZ,AC17V/2.7V,-,-,-,-	1	SA	LVT1
1-1	DE30-20016A	BUZZER	CBE2220BA,STICK,-,-,-,-,-,-,-	1	SNA	BZ01
1-2	DE39-60001A	WIRE-SO COPPER	,PI0.6,SN,T,52MM TAPING_WIRE,	19	SNA	J01~J19
1-2	DE41-00309A	PCB-MAIN	RAS-OTR7HV,FR-1,1,-,T1.6,197*197,-,2 ARRAY,-,-	1	SNA	
1-2	DE60-60012A	PIN-EYELET	ID2.1,OD2.5,L3.0,SN,BSP,T0.25,	3	SNA	
1-1	DE61-90164A	HOLDER-DIGITRON	BLK,NYLON#66,-,BLK,MW4370W,-,MW4370W	1	SNA	
1-1	DE68-02628A	LABEL-PCB ADHESIVE	-,-,-,-,W10,L30,WHT,-,-,-	1	SNA	
1-1	DE92-01674A	ASSY PCB AUTO	-,-,RAS-OTR7HV-04,120V60HZ	1	SA	

9. Schematic Diagrams

9-1 Schematic Diagrams (This Document can not be used without Samsung's authorization)



10. Reference

10-1 Model name standard

Baoad Classification	Distin-guisher	Middle Classfication	Distin-guisher	Product Code	Full Nane
USA CMO	M	CMO (Counter-top MWO)	W	MW	USA CMO(EPOXY CAVITY)
		UTC (Under The Cabinet)	U	MU	USA UTC
		Browner, Grill	G	MG	USA GRILL
		Convection	C	MC	USA CONVECTION
		Sensor	S	MS	USA CMO SENSOR
		DC MWO	D	MD	USA DC MWO
		Hospital MWO	H	MH	USA Hospital MWO
		Ceramic Enamel	E	ME	USA CMO(CERAMIC ENAMEL)
USA RV	R	SOLO	M	RM	USA RV SOLO
		CONVECTION	C	RC	USA RV CONVECTION
		BUILT-IN	B	RB	USA RV BUILT-IN
USA Junior	SJ			SJ	USA Junior MWO
USA OTR	SM	SOLO	H	SMH	USA OTR SOLO
		CONVECTION	V	SMV	USA OTR CONVECTION
EUROPE Ep-oxy Cavity	M	SOLO	1	M1	EUROPE SOLO(EPOXY CAVITY)
		GRILL	2	M2	EUROPE GRILL(EPOXY CAVITY)
EUROPE Ce-ramic Enamel	CE	SOLO	1	CE1	EUROPE SOLO(CERAMIC ENAMEL)
		GRILL	2	CE2	EUROPE GRILL(CERAMIC ENAMEL)
EUROPE Quartz GRILL	G2			G2	EUROPE Quartz GRILL
EUROPE Power Grill	PG			PG	POWER GRILL
EUROPE Con-vection	CK			CK	EUROPE CONVECTION
	C			C	EUROPE CONVECTION
EUROPE Fully Built-In	F	SOLO	W	FW	EUROPE SOLO FULLY BUILT-IN
		GRILL	G	FG	EUROPE GRILL FULLY BUILT-IN
		CONVECTION	C	FC	EUROPE CONVECTION FULLY BUILT-IN

10-2 Customer inquiry cases and countermeasures

Symptom	Cause	Countermeasures
Air is evacuated from the oven.	• The vent of the oven is designed to be placed on the bottom of the product, and air is evacuated from the oven.	In the past, the vent was placed on the back panel of the oven. Since the oven was placed near the wall of a kitchen, the wall behind the oven was discolored. Thus, the vent of a new oven is placed on the bottom of the product, and air is evacuated from the oven.
The oven works automatically whenever the power is turned on.	• It may happen due to power failure or abnormal voltage. • It may happen when the door does not close completely.	• Connect the power plug three seconds after disconnecting the power plug. • Close the door completely => Press the Cancel button => Press the Start button.
Heating	• In many cases, it may happen when the power level is incorrectly set. • It may happen when the door does not close completely. • It may happen when the oven is out of order.	• Select HIGH by rotating the Cooking Power Control knob. - KEEP WARM: This function is used to warm the cooked food for a certain time period, not to heat the food. - MEDIUM/LOW: This function is used to cook the food slowly. • Close the door completely. => Press the Cancel button. => Press the Start button. • Contact the nearest Samsung after-sales service center.
Ground	• Ground problem may happen when the oven is placed in a humid area and the over is not grounded. • Ground is not provided by an extended electric outlet.	• If the oven is placed in a humid area, buy an electric wire in a store selling electrical products. (Electric wires for home use are also allowed) Ground the oven through the electric wire. • Buy an electric wire in a store selling electrical products. (Electric wires for home use are also allowed) Ground the oven through the electric wire.
Turn table occasionally rotates in reverse order.	• Turntable has been designed to rotate in either direction since 1994.	• In the past, the gear of the turntable was easily worn by turning it during cleaning. Now, the turntable of the oven is designed to rotate in both directions to prevent damage during cleaning. (Rotation direction is set when the oven initially operates.)
The oven sometimes beeps.	• The oven beeps every minute unless the food is in the oven after the food is cooked completely. • The oven occasionally beeps during cooking.	• Open and close the door again. (Beeping sounds indicate that the food is ready to be removed from the oven after cooking is complete.)

10-2 Customer inquiry cases and countermeasures (Continued)

Symptom	Cause	Countermeasures
Strange popping sounds are produced while fish is cooked.	• Since fish is salty and maintains its moisture, it is cooked while making a series of soft popping sounds. (The liquid may come out of the fish when the fish is cooked.)	• Food with bones such as fish (e.g. mackerel) and pork (e.g. pork chops) is cooked while making a series of soft popping sounds. Wrap the food completely so that food particles or spattered oils do not stick to the oven walls or floor.
Strange smell is produced in the oven.	• It may happen when food particles stuck to oven walls or floor. “	• Clean the inside of the oven. => Remove strange smell through the Deodorant button => If the strange smell still remains, place a piece of lemon on the turntable and operate the oven for 5 minutes by pressing the Deodorant button.(However, the smells produced from the food exposed such as herbal remedies are not removed.)
Error	• Errors are classified into the case which is out of order and the case which is not out of order.	• Clean the inside of the oven. => Remove strange smell through the Deodorant button => If the strange smell still remains, place a piece of lemon on the turntable and operate the oven for 5 minutes by pressing the Deodorant button. (However, the smells produced from the food exposed such as herbal remedies are not removed.)
Accessory		• Visit the nearest Samsung Service Center or local dealer to buy accessories. Before visiting, check the model name printed on the lower right side of the front panel of the oven.
Number does not appear on the display screen.	It happens when the power saving function is activated.	• Since the government recommends the reduction of electricity, the power saving function is performed for number display like that power cord is unplugged when the oven is not used. (Numbers are displayed when another button is pressed or when the door opens.)

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